

THE ANDEAN CULTURAL MODEL OF *SUSTO*:
CULTURAL CONSONANCE AND
HISTORICAL TRAUMA IN THE ANDES

by

B. BLAKELY BROOKS

WILLIAM W. DRESSLER, COMMITTEE CHAIR
KATHRYN S. OTHS
JASON A. DECARO
JOHN BLITZ
PATRICIA J. HAMMER

A DISSERTATION

Submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy in the
Department of Anthropology in the
Graduate School of
The University of Alabama

TUSCALOOSA, ALABAMA

2011

Copyright B. Blakely Brooks 2011
ALL RIGHTS RESERVED

ABSTRACT

The research presented in these pages on cultural consonance, historical trauma, and *susto* demonstrates important relationships between risk factors for *susto*. *Susto* is a cultural syndrome associated with fright that impacts Andean farmers. Methods of epidemiology and cultural consensus analysis were used to explore the distribution of understandings of *susto* in the Callejón de Huaylas valley. Andeans link a combination of culturally salient and generalized illness symptoms to *susto*, and how one classifies these symptoms is dependent upon a number of sociocultural factors. Historical trauma was explored as it related to *susto*. Historically traumatic events are frightening and are a common cause of *susto*, suggesting that *susto* may be a culturally salient model for dealing with cultural trauma. By analyzing the symptomatology of *susto* from an epidemiologic standpoint one can gain insight into Andean culture and health-seeking behaviors. The Susto Symptom Scale developed for this research is an important diagnostic tool for determining if one has *susto*. *Susto* is an idiom for historical trauma and is helpful in assessing the level of exposure to historical trauma that highlanders in the valley have endured. *Susto* seems to be an “explanatory model” to deal with anxiousness associated with suffering from an illness. There are multiple risk factors that can help to determine if an individual is at an increased risk for developing *susto*. *Susto* is the combination between low cultural consonance, age, and a historically traumatic past; and it is these factors that make the cultural model of *susto* applicable.

LIST OF ABBREVIATIONS

| | |
|----------------|---|
| CCSRES | Cultural Consonance in Social Role Expectations Scale |
| HTQ | Historical Trauma Questionnaire |
| SSS | <i>Susto</i> Symptoms Scale |
| PSS | Cohen's Perceived Stress Scale |
| GHQ | General Health Questionnaire |
| N, n | Number |
| P | Probability of results or outcome |
| r | Pearson product moment correlation |
| R ² | Multiple correlation coefficient |
| t | computed value of t-test |

SPANISH TO ENGLISH GLOSSARY

| | |
|-------------------------------|--|
| <i>adobe</i> | bricks made of mixture of straw, manure, and dirt |
| <i>alberjas</i> | peas |
| <i>calabaza</i> | squash or pumpkin |
| <i>camote</i> | orange sweet tuber variety similar to sweet potato |
| <i>cancha</i> | dried roasted maize |
| <i>cebolla</i> | red onion |
| <i>chocho</i> | type of small legume eaten cold as part of a salad |
| <i>choclo</i> | large kernel white maize |
| <i>Comités de Autodefensa</i> | Civil Defense Committees |
| <i>cuy</i> | guinea pig |
| <i>habas</i> | large lima bean variety used for making flour |
| <i>lampa</i> | type of shovel |
| <i>mashua</i> | yellow pointed tuber variety |
| <i>nabo</i> | large white turnip |
| <i>oca</i> | small sweet white tubular tuber variety |
| <i>olluco</i> | tuber variety similar in taste to a beet |
| <i>papas</i> | potatoes |
| <i>queshe</i> | Andean hoe like implement |

| | |
|--------------------------|---|
| <i>quinoa</i> | type of small protein rich Andean grain |
| <i>rondas campesinas</i> | guarding rounds |
| <i>Sendero Luminoso</i> | The Shining Path |
| <i>trigo</i> | wheat |
| <i>yunta</i> | team of yoked bulls used for plowing |
| <i>zapallo</i> | squash variety |

ACKNOWLEDGEMENTS

I am greatly indebted to a number of individuals for assistance in completing this project. I would like to express my heartfelt gratitude to William W. Dressler for his everlasting patience, understanding and support. Without his wisdom, guidance, and innumerable hours of work, I would not have developed the skills necessary to complete this research project. His ability to teach cultural consensus analysis and multivariate statistics made this project possible. I am indebted to Kathryn S. Oths for sharing her knowledge of Andean culture. I appreciate the long hours she spent critically reading the text for areas of improvement. I am grateful to Jason A. DeCaro for his valuable feedback on biocultural research and for always challenging me to work harder. I thank John Blitz for encouraging me to focus on the larger implications of my research. I am grateful to Patricia J. Hammer for introducing me to health in the Andes Mountains at her field school many years ago and for encouraging me to think about the application of my research on health studies in Peru. I could not have completed this work without the instruction of my committee members. I thank the Capstone International Program, the Graduate School and the Anthropology Department of the University of Alabama for their financial support. I also want to thank Myra Combs for her grammatical advice and editorial comments in earlier drafts of this work.

I am extremely grateful for the unwavering love and support of my wife Shelly Hines-Brooks. Without her tremendous patience and understanding throughout this project it would have been impossible to complete. Her support as both my research

assistant and Spanish interpreter in the field were invaluable to me. Her critical advice and cultural knowledge about the Andes were important in my research. She always knows how to offer words of encouragement in times of need. She has always been a source of inspiration and I could not have completed the work without her.

I am indebted to many friends and family members. I would like to thank my parents, Bud and Linda Brooks, for their financial and emotional support throughout my graduate career. I am also grateful to my in-laws, Larry and Billie Hines, and my sister-in-law, Valarie Hines, for their encouragement and support. I would like to especially thank Toni Copeland for her encouragement and advice. She has been an amazing friend and colleague to me. I am indebted to Rick Brown for his support throughout the writing and analysis stages, as we went through the experience together. I would like to thank another colleague, Casey Barrier, for always checking in on me with kind words.

I am eternally grateful to my friend Don Pancho for imparting his tremendous knowledge of Andean culture. This research would not have been possible without his willingness to travel with me to remote communities and his patience as we discussed the illness of *susto*. His love and dedication to teaching is unparalleled. I am indebted to the Olaza family for opening their homes and hearts to us. Their support made living in Peru enjoyable. I also want to thank the members of each Andean community. The Galán and Serafín-Lluya families were especially instrumental in my research. I appreciate all my highland informants for their willingness to participate in this project.

CONTENTS

| | |
|---|-----|
| ABSTRACT..... | ii |
| LIST OF ABBREVIATIONS..... | iii |
| SPANISH TO ENGLISH GLOSSARY..... | iv |
| ACKNOWLEDGEMENTS..... | vi |
| LIST OF TABLES..... | xiv |
| LIST OF FIGURES..... | xvi |
| Chapter 1: Introduction..... | 1 |
| Chapter Outline..... | 7 |
| Chapter 2: Theory, Background, and Significance: A Biocultural Approach to Understanding Cultural Syndromes..... | 11 |
| Introduction..... | 11 |
| Psychoanalytic Approaches to Cultural Syndromes..... | 15 |
| Interpretive Approaches to Cultural Syndromes..... | 18 |
| Emotional Interpretation..... | 19 |
| Meaning Centered..... | 21 |
| Interpretive Categorization..... | 22 |
| Epidemiological Approaches to Cultural Syndromes..... | 25 |
| Theoretical Strengths of an Epidemiological Approach..... | 26 |
| Methodological Strengths of an Epidemiological Approach..... | 27 |
| Weaknesses of an Epidemiological Approach to Cultural Syndromes.... | 31 |

| | |
|--|----|
| Biocultural Approaches to Cultural Syndromes..... | 32 |
| Theoretical Strengths of a Biocultural Approach..... | 34 |
| Methodological Strengths of a Biocultural Approach..... | 36 |
| Weaknesses of a Biocultural Approach to Cultural Syndromes..... | 39 |
| Biocultural Incorporation of Cultural Consonance..... | 39 |
| Chapter 3: The Ethnography of the Callejón de Huaylas of Peru..... | 42 |
| History of the Callejón de Huaylas..... | 44 |
| Historical Traumas..... | 46 |
| Callejón de Huaylas Highland Descriptions of <i>Susto</i> | 51 |
| Social Organization and Social Roles..... | 52 |
| The Town of Huaraz..... | 59 |
| Highland Hamlets of the Callejón de Huaylas..... | 62 |
| Chapter 4: Research Design and Methods..... | 70 |
| Cultural Domain Analysis..... | 70 |
| Sampling..... | 72 |
| Phase One: Free listing..... | 73 |
| Phase Two: Unconstrained Pile sorts..... | 74 |
| Phase Three: Constrained Pile sorts and Ranking Tasks..... | 76 |
| Constructing a Survey Interview Schedule..... | 78 |
| Phase Four: Epidemiological Case-Control Methods..... | 79 |
| Key Informants..... | 79 |

| | |
|---|-----|
| <i>Susto</i> Cases..... | 80 |
| Control Non- <i>susto</i> Sufferers..... | 80 |
| Approval and Consent..... | 80 |
| Interview Schedule..... | 80 |
| Cultural Consonance in Social Role Expectations Scale..... | 80 |
| <i>Susto</i> Symptoms Scale..... | 86 |
| Physical Symptoms: General Sickness Symptoms..... | 87 |
| Cultural Symptoms: Classic <i>Susto</i> Symptoms..... | 87 |
| Historical Trauma Questionnaire..... | 90 |
| Historical Trauma Scale..... | 92 |
| Cohen’s Perceived Stress Scale..... | 93 |
| General Health Questionnaire..... | 94 |
| Methods of Analysis..... | 95 |
| Chapter 5: Cultural Domain Analysis Results..... | 97 |
| Phase One: Free list Analysis..... | 97 |
| Phase Two: Unconstrained Pile sort Analysis..... | 108 |
| Farm Tool Pile sort..... | 108 |
| Historical Events Pile sorts..... | 109 |
| <i>Susto</i> Symptoms Pile sort..... | 110 |
| Social Role Pile sort..... | 112 |
| Phase Three: Constrained Pile sorting and Ranking Analysis..... | 114 |

| | |
|---|-----|
| Farm Tool Ranking..... | 114 |
| <i>Susto</i> Symptoms Ranking..... | 114 |
| Social Role Ranking..... | 115 |
| Chapter 6: Case-Control Results..... | 118 |
| Reliability Analysis Test of Scales..... | 119 |
| Descriptive Statistics of Main Independent Variables..... | 127 |
| Demographic Variables..... | 127 |
| Independent Variables..... | 128 |
| Dependent Variables..... | 130 |
| Bivariate Associations..... | 131 |
| Multivariate Models..... | 135 |
| Regression Analysis of <i>Susto</i> Status..... | 136 |
| Regression Analysis of <i>Susto</i> Symptoms Scale..... | 137 |
| Multiple Regression Model 1..... | 137 |
| Multiple Regression Model 2..... | 138 |
| Regression Analysis of Perceived Stress Scale..... | 140 |
| Regression Analysis of General Health Questionnaire..... | 142 |
| Data Analysis and Conclusions..... | 143 |
| Chapter 7: Case Studies of the Andean Highlanders of the Callejón de Huaylas..... | 145 |
| Case One: Young and Low <i>Susto</i> Symptoms Score..... | 146 |
| Case Two: Old and Low <i>Susto</i> Symptoms Score..... | 147 |

| | |
|---|-----|
| Case Three: Young and High <i>Susto</i> Symptoms Score..... | 149 |
| Case Four: Old and High <i>Susto</i> Symptoms Score..... | 151 |
| Discussion..... | 153 |
| Chapter 8: Discussion and Conclusions..... | 156 |
| Introduction..... | 156 |
| <i>Susto</i> | 156 |
| Cultural Consonance..... | 157 |
| Historical Trauma..... | 158 |
| Cultural Syndromes..... | 160 |
| Andean Ethnography..... | 163 |
| Importance for Biocultural Research..... | 164 |
| Research Design..... | 166 |
| A Model of <i>Susto</i> | 170 |
| Risk Factors for <i>Susto</i> | 174 |
| Limitations of Research..... | 179 |
| Implications..... | 183 |
| Directions for Further Research..... | 187 |
| Conclusions..... | 189 |
| References..... | 190 |
| Appendix A: Free listing Data Collection Form..... | 198 |
| Appendix B: Pile sorting Data Collection Form..... | 200 |

| | |
|--|-----|
| Appendix C: Ranking Task Data Collection Form..... | 209 |
| Appendix D: Case-Control Data Collection Form..... | 215 |
| Appendix E: Informed Consent Form..... | 224 |
| Appendix F: Institutional Review Board Approval..... | 228 |

LIST OF TABLES

| | |
|--|-----|
| Table 4.1 Social Role Interview Questions #1-#3..... | 82 |
| Table 4.2 Social Roles Expectations Interview Questions..... | 85 |
| Table 4.3 <i>Susto</i> Symptoms Scale..... | 89 |
| Table 4.4 Historical Trauma Questionnaire..... | 92 |
| Table 6.1 Reliability Analysis of <i>Susto</i> Symptoms Scale..... | 119 |
| Table 6.2 Reliability Analysis of Cultural Consonance in Social Role Expectations Scale..... | 120 |
| Table 6.3 Reliability Analysis of Historical Trauma Scale..... | 122 |
| Table 6.4 Reliability Analysis of General Health Questionnaire..... | 123 |
| Table 6.5 Reliability Analysis of Cohen’s Perceived Stress Scale..... | 124 |
| Table 6.6 Chi-Square Test of Significance for the Independent Variable of Gender and the Dependent Variable of <i>Susto</i> or Control Status..... | 127 |
| Table 6.7 Mann-Whitney U Tests of Significance of the Independent Variables of Age and Years of Education and the Dependent Variable of <i>Susto</i> or Control Status (variable medians)..... | 127 |
| Table 6.8 Descriptive Statistics for the Independent Variables of Cultural Consonance in Social Role Expectations and Historical Trauma for <i>Susto</i> and Control Participants of the Callejón de Huaylas..... | 128 |
| Table 6.9 Comparing Cases and Controls Mean Scores on the General Health Questionnaire, Cohen Perceived Stress Scale, and the <i>Susto</i> Symptoms Scale..... | 132 |
| Table 6.10 T-tests Comparing Cases and Controls Mean Scores for Cultural Consonance and Historical Trauma..... | 133 |

| | |
|--|-----|
| Table 6.11 Correlation Matrix of <i>Susto</i> Symptoms Scale, General Health Questionnaire, Cohen Perceived Stress Scale, Cultural Consonance in Social Role Expectations Scale, and Historical Trauma Scale..... | 135 |
| Table 6.12 Logistic Regression of <i>Susto</i> Status..... | 136 |
| Table 6.13 Linear Regression of <i>Susto</i> Symptoms Scale..... | 137 |
| Table 6.14 Linear Regression of <i>Susto</i> Symptoms Scale Focusing on Interaction Effect of Age and Cultural Consonance..... | 139 |
| Table 6.15 Linear Regression of Cohen Perceived Stress Scale..... | 140 |
| Table 6.16 Linear Regression of General Health Questionnaire..... | 143 |

LIST OF FIGURES

| | |
|--|-----|
| Figure 3.1 Map of South America..... | 43 |
| Figure 3.2 Map of Department of Ancash..... | 44 |
| Figure 3.3 Woman Sorting Harvested Wheat..... | 54 |
| Figure 3.4 Male Work Group Building a House in Jahua..... | 57 |
| Figure 3.5 Town of Huaraz..... | 59 |
| Figure 3.6 Map of Huaraz..... | 61 |
| Figure 3.7 Map of Hamlets in the Callejón de Huaylas Valley..... | 62 |
| Figure 3.8 Various Types of Oca..... | 63 |
| Figure 3.9 <i>Yunta</i> Plowing Field for Planting..... | 64 |
| Figure 3.10 Hamlet of Pampamaca..... | 65 |
| Figure 3.11 Wool Dying in Pampamaca..... | 66 |
| Figure 3.12 Jahua..... | 66 |
| Figure 4.1 Informants Pile Sorting in Paria..... | 75 |
| Figure 5.1 Qeshe..... | 101 |
| Figure 5.2 Women Sorting Lima Bean Harvest..... | 102 |
| Figure 5.3 Women Planting Potatoes..... | 103 |
| Figure 5.4 Multidimensional Scale Representation of Farming Requirements..... | 108 |
| Figure 5.5 Multidimensional Scale Representation of Historical Events..... | 110 |
| Figure 5.6 Multidimensional Scale Representation of <i>Susto</i> Symptoms..... | 111 |

| | | |
|-------------|---|-----|
| Figure 5.7 | Multidimensional Scale Representation of Social Roles..... | 113 |
| Figure 6.1 | Histogram of Cultural Consonance in Social Role Expectations Scale of <i>Susto</i> and Control Participants of the Callejón de Huaylas..... | 129 |
| Figure 6.2 | Histogram of Historical Trauma Scores between <i>Susto</i> and Control Participants of the Callejón de Huaylas Valley..... | 129 |
| Figure 6.3 | Histogram of <i>Susto</i> Symptoms Scale Scores between <i>Susto</i> and Control Participants of the Callejón de Huaylas..... | 130 |
| Figure 6.4 | Histogram of Cohen Perceived Stress Scale between <i>Susto</i> and Control Participants of the Callejón de Huaylas..... | 131 |
| Figure 6.5 | Histogram of General Health Questionnaire between <i>Susto</i> and Control Participants of the Callejón de Huaylas of Peru..... | 131 |
| Figure 6.6 | Comparing Cases and Controls Mean Scores on the General Health Questionnaire, Cohen Perceived Stress Scale, and the <i>Susto</i> Symptom's Scale..... | 133 |
| Figure 6.7 | Comparing Cases and Controls Mean Scores on Cultural Consonance in Social Role Expectations Scale and Historical Trauma Scale..... | 134 |
| Figure 6.8 | Linear Regression of Historical Trauma and <i>Susto</i> Symptoms..... | 138 |
| Figure 6.9 | Linear Regression of <i>Susto</i> Symptoms Scale Focusing on Interaction Effect of Age and Cultural Consonance..... | 139 |
| Figure 6.10 | Linear Regression of Perceived Stress Scale Focusing on Age..... | 141 |
| Figure 6.11 | Linear regression of Perceived Stress Scale Focusing on Historical Trauma..... | 142 |

Chapter 1- Introduction

The intention of this dissertation is to examine the cultural syndrome of *susto* among Andean farmers of the Callejón de Huaylas of Peru. This research was influenced by Arthur Rubel's classic work on the epidemiological approach to understanding *susto*, in which he identifies *susto* as a combination of folk and physical symptoms. I expand his approach by utilizing an epidemiologic case-control design to determine if individuals who have recently suffered from *susto* will have lower cultural consonance with social role expectations than those who have not recently suffered from *susto*. *Susto* is an illness or condition of debility, depression, and weakness that follows a sudden frightening experience and is believed to be related to the loss of one's soul from the body (Rubel 1984). Cultural consonance is the level of difficulty experienced by individuals trying to live in accordance with shared cultural models (Dressler 2005). The research examines hypotheses related to the relationships between: (a) the cultural syndrome of *susto*, (b) Andean physical well-being, (c) Andean emotional well-being; (d) one's level of cultural consonance in Andean social role expectations, and (e) historical traumas.

The main research question to be addressed is: will lower cultural consonance in the cultural model of Andean social role expectations, along with higher exposure to historical trauma and decreased physical well-being, lead to *susto*? The research areas of

illness symptoms, physical well-being, mental well-being and exposure to historical trauma will be explored as they related to *susto*. These are all important factors to consider when studying *susto* in the Andean cultural context.

Data were collected on cultural expectations pertaining to specific social roles in Andean society, and these data formed the basis for the construction of the Cultural Consonance in Social Role Expectations research instrument. Cultural domain analysis was used to examine the cultural model of Andean social roles. This exercise was used to first extract important components of the gendered social role expectations (based on domains utilized by Rubel et al. to study *susto* in Mexico) and then to utilize these elements to more fully develop the measure of Cultural Consonance in Social Role Expectations. The methods of cultural consensus analysis help to identify the culturally salient elements of the Andean social role.

These same methods of cultural domain analysis were used to compile a list of all possible *susto* symptoms and a series of historical events that were traumatic to members of the Andean community. This type of analysis enabled the measurement of the intensity of an episode of *susto*. The development of this type of checklist is important since it was the first time a *susto* symptom checklist had been implemented in the study of cultural syndromes. This research examined one's knowledge of the model of social role expectations, one's ability to enact that model in daily life, physical well-being, and *susto*.

The second phase of the research project used epidemiological case-control methods to collect data with a variety of research instruments. During this phase each informant was administered the Cultural Consonance in Social Role Expectations Scale (CCSRES), *Susto* Symptom Checklist (SSC), Historical Trauma Questionnaire (HTQ), General Health Questionnaire (GHQ), and Cohen's Perceived Stress Scale.

In medical anthropology literature, the nature of illness is conceptualized from various perspectives. Furthermore, it is beyond the scope of this research to compile an exhaustive survey of all the literature on the particular types of illnesses categorized as cultural syndromes. However, the discussion of *susto* in this research should serve as an adequate sampling of the different approaches to understanding cultural syndromes. Understandings of cultural syndromes are formulated based on four competing notions of illness in medical anthropology: illness representations as folk beliefs, cognitive models, culturally constituted realities, and mystification (Good 1994). A cultural syndrome, also known as a folk illness, is a complex understanding of illness that is culturally specific (O’Neill and Rubel 1980; Oths 1999). The holistic conception of the mind body connections and group and individual understanding of sickness must be encompassed in the study of such illness. This work will discuss how cultural syndromes are studied from psychoanalytic, interpretive, epidemiological, and biocultural approaches in medical anthropology. More specifically, it will focus on demonstrating the weakness within psychoanalytic and interpretive approaches to cultural syndromes in medical anthropology. Additionally, it will discuss how epidemiologically and bioculturally oriented perspectives allow for greater understanding of the prevalence of cultural syndromes within a society. The perspective adopted for this research seeks to demonstrate the strengths of a biocultural framework by discussing how cultural syndrome studies using this orientation have shown relationships between illnesses and a combination of biological and cultural factors. This approach will also highlight the theoretical and methodological advantages of a biocultural orientation in medical anthropology, advocating its ability to resolve many of the problems associated with other more purely psychoanalytic, interpretive, and epidemiological understandings of cultural syndromes.

Some researchers suggest that the definition of a cultural syndrome is a discrete set of clustered symptoms unique to a particular cultural group (Davis and Guarnaccia 1989). However, this definition of cultural syndromes is problematic because it does not take into account that cultural syndromes tend not to be unique to one cultural group, given that some exist within distinct cultural groups who share some larger cultural historical similarities. One such example is *susto*, which was found in Mexico by Rubel (1984) as well as in Peru by Bolton (1981). Clearly, these two culture areas are related in that they were both exposed to Spanish conquest, but culturally, the highlands of the Andes are distinct in many ways from the highlands of Mexico. I will use this example as a point of comparison for discussing the different broad theoretical orientations used in medical anthropology to study cultural syndromes.

In “What’s Cultural about Biocultural Research?,” Dressler (2005) describes the biocultural approach to medical anthropology as a research orientation that furthers the understanding of culture and biology by incorporating a cognitive notion of culture that is embedded within current culture theory, utilizes more rigorous research methods such as cultural consensus analysis, emphasizes meaning, and links collective meaning to individual behavior. The biocultural framework is used to study cultural syndromes by allowing the researcher to show how collective and individual meaning relate to individual behavior in the context of an illness. Other biocultural researchers, such as Guarnaccia and Rogler (1999) suggest that further research on cultural syndromes must integrate cultural and clinical knowledge. The biocultural medical anthropological perspective shows that each cultural syndrome is not necessarily unique, but instead is a complex notion of meaning related to the way an individual tries to enact agreed upon cultural models in his or her life, along with the physiological consequences of failure to adequately enact those models.

The research contributes to cultural anthropology by demonstrating how culture—operationalized with the cultural consensus model—can be linked to individual behavior to understand how social processes manifest in the form of social stress and cultural syndromes. The assessment of Andean social role expectations will extend cultural anthropological knowledge of social life in the Andes in general and, more specifically, give greater ethnographic knowledge of farmers' lives in the Callejón de Huaylas. It will help show that traumatic events can disrupt the cultural lives of individual farmers living in the Andes. The use of cultural domain analysis to create a *susto* symptom checklist will extend the utility of this type of analysis as a research technique for comparing individual and group understandings of illness. The knowledge gained from this research will contribute to the existing anthropological literature on this particular cultural syndrome by demonstrating how *susto* in the Andes of Peru is ethnographically similar to and different than *susto* documented in other areas of Latin America.

Stein (1985) emphasizes the necessity for anthropologists to study the association between folk symptoms and physical symptoms in the Andes, just as Rubel and O'Neil did in Oaxaca, Mexico by using the tools of epidemiology to develop a multidimensional perspective on *susto*. This research will address Stein's (1985) recommendation by showing that *susto* in the Andes is associated with social stress and physical weakness. Additionally, this will expand on Rubel's earlier findings in Mexico, suggesting that *susto* might be associated with physical weakness. The research design I employ demonstrates how social processes, such as Andean social role stress, and cultural phenomenon, such as cultural syndromes, can be quantified and measured in relation to culturally prescribed social understandings that vary based on individual command of cultural knowledge. Studying *susto* and its relationship to social stress demonstrates that social dysfunction, as the individual experiences it, is culturally constructed in

the form of a culturally acceptable type of illness: a cultural syndrome.

The research on social stress will have an impact beyond the community of anthropology by challenging existing biomedical understandings, such as the use of the DSM-IV, to identify and develop diagnoses for illnesses. It will suggest that the main focus in developing diagnostic criteria should be on understanding how social and cultural elements frame individual perceptions of reality. Particularly, this study will explore the influence of Andean social roles on the way individual highland farmers perceive reality. The development of a *susto* symptom checklist should assist biomedical doctors as well as other types of healers by providing them a diagnostic tool for linking a series of associated symptoms to a cultural syndrome. With the help of a symptom checklist, healers will be able to diagnose *susto* more efficiently and be able to advance the treatment of the cultural syndrome more rapidly. Just as Dressler's (2001) research on social stress and blood pressure has shown that the health of individuals living in industrialized societies is influenced by social stress, so too can the health of Andean farmers be impacted by social stress, albeit through different social stressors. The results of this research help Andean farmers recognize that the illness of *susto* is related to events and problems they have culturally experienced both as a group and as individuals. The outcomes of this study demonstrate that illness can take many forms based upon culturally prescribed understandings of well-being.

In addition to creating the *susto* symptoms checklist, this study impacts other research on *susto* and physical well-being by incorporating a different approach to analyzing physical well-being and *susto*: collecting data using the General Health Questionnaire and Cohen's Perceived Stress Scale. These scales have been used to study physical well-being, but not in relation to *susto*, and will be used to examine in greater detail the health status of persons diagnosed with

susto. A weakness discussed in previous *susto* literature has been that researchers, such as Rubel et al. (1984), used physicians' ratings of symptoms reports (without direct physical examination) to evaluate individual physical well-being of sufferers, instead of incorporating a research instrument into the research design. This weakness suggests that cross-cultural research on stress and immune system functioning should incorporate more rigorous biological measures (Weller et al. 2008). Weller et al. (2008) have shown *susto* to be a culturally defined label for stress experienced by individuals in specific cultural settings. Their research demonstrates that this syndrome can be used as a predictor for individual lack of physical and social well-being. This study aims to increase anthropological knowledge of *susto* in the social, economic and historical context of the Peruvian Andeans.

Outline

Chapter 2: Theory, Background, and Significance: A Biocultural Approach to Understanding Cultural Syndromes

Chapter two begins with a discussion of the context of *susto* within the larger field of cultural anthropology. It discusses the differences between disease and illness and explains how the approach to illness taken with this research expands upon the level of knowledge of cultural syndromes in medical anthropology. Social stress, explored in the context of the Peruvian Andes, is defined, and various relationships are established between social stress and cultural syndromes. Finally, these syndromes are discussed with a focus on the various methodological orientations that have been employed in cultural syndrome research.

Chapter 3: The Ethnography of the Callejón de Huaylas of Peru

Chapter three begins by giving a description of the Peruvian Andes and their location

within the larger Andean mountain range. It focuses on the Peruvian ethnographic context of the Andes including the mode of subsistence of Peruvian highlanders and describes the cultural context of the Callejón de Huaylas and offers discussion regarding the highlanders social activities. A brief discussion of each research hamlet in the valley is included with its geographic location and demographic context.

Chapter 4 : Research Design and Methods

Chapter four begins with discussion of the various methodologies employed in data collection and describes the process using the methods of cultural domain analysis. Phase one is described as focusing on enlisting informants from each of the nine hamlets to perform free listing exercises on the social roles of good or bad men, women, husbands, wives, fathers, mothers, and farmers; farm tools; *susto* symptoms; and historical events that occurred in the valley. Phase two involved selecting informants to perform unconstrained and constrained pile sorts on a narrowed list of free list terms. Phase three had informants sort various piles of cards into groups and then to rank each of terms from most important to least important. Phase four involved case-control sampling. It includes a description of the creation of the Cultural Consonance in Social Roles Expectations research instrument using cultural consensus analysis. The formation of *Susto* Symptoms Checklist is also outlined since it also based on cultural consensus analysis of the data collected in phases 1-3. The creation of the Historical Trauma Questionnaire is explained in relation to people's description and organization of historically significant events in the valley and also in conjunction with cultural consensus analysis. The sample strategy of case control sampling is described in detail including justification for its use in this type of data collection. The physical well-being measures of the General Health Questionnaire and Cohen's Perceived Stress Scale are outlined in relation to their role in the data

collection process. The chapter concludes with a discussion of cultural consonance and how one can test for it using this type of data.

Chapter 5 : Cultural Domain Analysis Results

Chapter five discusses the data analysis process in detail including how each phase was analyzed using cultural domain analysis. The free list data from phase one were analyzed using Anthropic and informant agreement emerged in each of the social domains, *susto* symptoms, and historical traumas. The unconstrained and constrained pile sort data from phase two were analyzed using Anthropic and informant agreement on cultural models for each dimension of importance in the cultural domains of social role expectations, *susto* symptoms, and historical traumas. The ranking data from phase three, when analyzed using Anthropic, suggests that there are several cultural models for each dimension of importance for Andean social roles, *susto* symptoms, and historical trauma.

Chapter 6 : Case-Control Results

Chapter six focuses on the analyses of the case and control data from phase four using the measure of cultural consonance. Cultural consonance is tested to determine if informants with *susto* and without *susto* are culturally consonant with the expected cultural model of social roles. Informant's knowledge of the cultural model of *susto* is investigated as it relates to *susto* diagnoses. The knowledge of the *susto* sufferer or nonsufferer is compared with the historical trauma and informant physical and mental well-being as measured through the General Health Questionnaire and Cohen's Perceived Stress Scale.

Chapter 7: Case Studies of the Andean Highlanders of the Callejón de Huaylas

Chapter seven discusses characteristics of typical Andean farmers living in the Callejón de Huaylas. It presents four case studies of farmers who participated in the study. Also

included is a profile of four different types of informants: one who scores low on the *susto* symptoms and is young, another who is young but has a large number of *susto* symptoms, an informant who is older and has not experienced many *susto* symptoms, and a highlander who is old and has suffered from many *susto* symptoms. This chapter focuses on why differences in cultural consonance matter among younger highlanders and not among older Andeans.

Chapter 8: Discussion and Conclusions

Chapter eight provides a full discussion of social stress and how cultural consensus analysis research methods operationalize social stress describing the relationships between social stress and cultural syndromes. Social Stress and *susto* are described as they relate to one another based on informant data. The consequences of not being culturally consonant in one or more domains of social importance in Andean society are outlined as they relate to the research sample. It concludes with a description of the place that this research has within the larger ethnographic context of the Andes. It suggests that there are new directions that this research approach can take to further explore the cultural category of the cultural syndrome.

Chapter 2: Theory, Background, and Significance: A Biocultural Approach to Understanding Cultural Syndromes

Introduction

In medical anthropological literature, the nature of illness is conceptualized from various perspectives. This chapter, although not intended to be an exhaustive survey of all the literature on the particular types of illnesses categorized as cultural syndromes, should serve as an adequate sampling of the different approaches to understanding cultural syndromes. Essentially a cultural syndrome is a complex understanding of illness that is culturally specific and which may also be known as a folk illness (O'Neil and Rubel 1980; Oths 1999). Understandings of these syndromes are formulated by anthropologists on four competing notions of illness: illness representations as folk beliefs, cognitive models, culturally constituted realities, and mystification (Good 1994). A cultural syndrome encompasses the holistic elements of the mind-body connections and individual and collective meaning. This chapter intends to discuss the psychoanalytic, interpretive, epidemiological, and biocultural approaches applied to the syndromes by medical anthropologists, and it will demonstrate the weaknesses within psychoanalytic, interpretive, and epidemiological approaches to cultural syndromes. The chapter will discuss how bioculturally-oriented perspectives allow for greater understanding of the prevalence of cultural syndromes within a society. By highlighting the theoretical and methodological advantages of a biocultural orientation in medical anthropology, the ability of this approach to resolve many of the problems associated

with other more purely psychoanalytic, interpretive, and epidemiological understandings of cultural syndromes is clearly evident.

While some researchers suggest that the definition of a cultural syndrome is a discrete set of clustered symptoms unique to a particular cultural group (Davis and Guarnaccia 1989), this definition is problematic because it does not take into account that the syndromes tend not to be unique to one cultural group, given that some exist within distinct cultural groups who share a number of significant cultural historical similarities. One such example is *susto*, which was found in Mexico by Rubel (1984) as well as in Peru by Bolton (1981). Clearly, these two culture areas are related in that they were both exposed to Spanish conquest, but culturally, the highlands of the Andes are distinct in numerous ways from the highlands of Mexico. I will use this example as a point of comparison when analyzing the broad theoretical orientations used in medical anthropology to study cultural syndromes.

A psychoanalytic approach examines how individuals may psychologically influence their understanding of the clustering of symptoms that individual sufferers label as a cultural syndrome. As a result, the syndrome is not recognized as unique, but is instead likened to psychological elements that may overlap between cultural groups. Furthermore, this approach to attempts to demonstrate how an illness, such as a cultural syndrome, reflects the interaction between an individual's culturally constructed notion of illness and his or her psychological interpretation of life. Some psychoanalytic studies such as that of Uzzell (1974) try to show that a given cultural syndrome represents a specific deviant role that an individual is performing in a society. Other researchers, such as Tousignant (1984), theorize a cultural syndrome to be reflective of a psychological disposition with life. Tousignant's research in Ecuador

demonstrates that *pena* is an outlook on life that becomes an illness when it persists beyond the culturally agreed upon limit for the bad feelings one should have experienced. Research that focuses on relationships between illness and individual psychological perspectives does not explain how people culturally construct the illnesses they experience based on symptoms.

An interpretive or cultural constructivist orientation argues that cultural syndromes are unique sets of symptoms that are organized by individuals within a specific cultural group and attempts to demonstrate these illnesses are manifestations caused by disruptions in culturally agreed upon notions of social well-being. This approach regards individuals as having learned specific cultural traits, which cause the individuals to label their interpretation of a set of events as a cultural syndrome. Consequently, each social group will have its own sets of understandings regarding illness that are culturally determined and specifically related to local knowledge of symptoms and etiology. Davis and Guarnaccia (1989) contend that certain symptoms will only be organized and understood as an illness under particular social conditions such as loss of social support or migration from rural to urban areas. The relationship noted by Davis and Guarnaccia (1989) between social change and individual perception is reflective of the interpretive notion of cultural constructed meaning . In “Concepts of Disease in Mexican-American Culture,” Rubel (1960) outlines how aspects of Mexican culture, such as the importance of familial social relationships, influence and construct the notions of illness commonly found among Mexican-American cultural populations. Specifically, he cites the example of the four conceptually linked illnesses of *caida de la mollera*, *empacho*, *mal ojo*, and *susto* among Mexican-Americans, and discusses how each are related to social tensions or changes in social relationships. The culturally constructed notions of illness described in this approach could be clarified with help from the methods of epidemiology.

The epidemiological approach to illness in medical anthropology utilizes more rigorous methodology as well as an understanding of cross-cultural notions of health to conceptualize cultural syndromes not as unique groupings of symptoms but instead as being related to specific risk factors found in varying degrees in many different populations. Studies using this method focus on identifying the prevalence rate within a population. Additionally, they also compare individuals with and without a given cultural syndrome, who belong to the same group and have been exposed to the same risk factors, to determine what may be causing the differing levels of illness. Within this approach anthropologists argue that culture alone does not cause an illness, but rather illness is a complex interaction between biological, environmental, psychological, and cultural factors. In his study of *susto*, Klein (1978) discusses a number of other studies of *susto* that do not utilize an epidemiological framework and therefore fail to recognize the physiological dimensions of *susto*. He suggests a relationship between *susto* and an underlying physiology because in addition to adults, young children who presumably are unaware of social stresses also suffer from *susto* (Klein 1978). Logan (1993) also discusses the need for more epidemiological studies of cultural syndromes that employ quantitative methods and the collection of biological data, as opposed to just qualitative methods. Therefore, an epidemiological approach to understanding cultural syndromes combines methods used by epidemiologists, such as case-control sampling, with the understanding that a variety of physiological, psychological, and cultural factors influence cultural syndromes. These methods could be even more effectively used when combined with the theoretical tools from biocultural anthropology.

Similarly to the epidemiological approach, the biocultural orientation recognizes the relationship between biology and culture, with the understanding that in order to study illnesses, one must assess the human physiology as well as the cultural models used by individuals to

organize and interpret their social surroundings. A biocultural approach recognizes that a cultural syndrome is not just a unique set of symptoms associated with a particular cultural group, but instead a complex notion of illness that can occur cross-culturally. Browner et al. (1988) calls for an integration of cultural and biological understandings from both an emic and an etic perspective. In the past, medical anthropologists were reluctant to emphasize the study of biological and cultural interactions because they feared that it reified the biomedical paradigm of taking ethnographic data and making it fit a narrow set of categories (Browner et al. 1988). The biocultural approach is advantageous in that it gives the researcher the theoretical and methodological tools needed to study the relationship between biological and cultural elements while also allowing the researcher to collect data that is both meaningful to the informants and able to be cross-culturally compared (Browner et al. 1988).

Psychoanalytic Approaches to Cultural Syndromes

Psychoanalytic medical anthropology seeks to explain the relationship between human psychology and culture by studying cultural elements such as cultural syndromes. A psychoanalytic approach describes a cultural syndrome in the context of native psychology and nosography (Tousignant 1984). Theoretically, psychoanalytic studies seek to understand the underlying human psychology in terms of how it frames individual perceptions of the cultural elements of social environment. When applying a psychoanalytic methodological stance, the researcher is to describe the cultural syndrome from an emic perspective using case histories and key informant interviews in order to then link the individual descriptions with psychological elements.

The cultural syndrome of *pena* found in the sierra of Ecuador has been examined from a psychoanalytic perspective. The purpose of the research was to determine the relationship

between *pena* and an ideology of submission that is common among some peasants living in the sierra (Tousignant 1984). The ideology of submission discussed by Tousignant (1984) is related individuals' perceptions of misfortune as *penas* or sorrows. The Quichua term for *pena* literally means physical or psychological suffering, which is a perspective on life that can be manifested as an illness when it persists beyond the culturally agreed upon limit assigned for the resolution of bad experiences (Tousignant 1984). Tousignant (1984) describes *pena* as a state of depression, anxiety, and sadness. The psychoanalytic perspective used in his study suggests that the cultural syndrome of *pena* is a central element in one's philosophy of life and concludes that individuals psychologically envision their past, present, and future lives as being filled with events that cause the accumulation of sadness and suffering.

Susto and *kureyna* are two different cultural syndromes that have been analyzed using psychoanalytic understandings of human psychology and culture. In a study of research that had been conducted on *susto*, Uzzell (1974) refers to *susto* or fright syndrome as a strategic identity role related to psychoanalytic elements. He concludes from his study that identifying oneself as having *susto* happens dialectically due to clues given by social actors in the sufferer's life (Uzzell 1974). The study implies the psychological notion that sufferers are exposed to the symptoms of *susto* culturally and thus begin to embody the symptoms at a unconscious level until they realize that they have the illness. The cultural syndrome of spirit possession, known as *kureyna*, examined by Young (1975) from a psychoanalytic perspective, is related to an individual's membership in a *zar* religious healing cult. Experiencing *kureyna* can be an individual's motive for joining the healing cult because he or she seeks treatment for the illness, but membership can also be an origin of the sickness since *zars* can cause sicknesses (Young 1975). This study emphasizes the connection between culture and psychology by claiming that

members unconsciously regard the *zars* as so powerful that they possess the ability to cause sickness, which is the cultural role the *zars* have been designated in Ethiopian society. Due to the knowledge of the *zars*' cultural role, if an individual becomes ill, he or she may psychologically interpret the illness as *kureyna*. The studies of *susto* and *kureyna* both demonstrate how psychoanalytic understandings are used to examine and interpret cultural syndromes.

Psychoanalytic approaches have also been employed to study sexually related cultural syndromes such as *white liver disease* in the Appalachian regions of the United States and *koro* in Southeast Asia. Cavendar and Crowder (2002) conclude that *white liver disease* is an illness of white spots on the liver caused by too much sexual intercourse and a sufferer of it is believed to have an insatiable sex drive. From a psychoanalytic standpoint, psychology is linked to Appalachian culture. Cultural beliefs about sex in Appalachia such as having the inability to control sexual desire are unconsciously interpreted to be the cause of *white liver disease*. Another sexual cultural syndrome, *koro*, is found in Southeast Asia. *Koro* is a condition of genital hyperinvolvement, nerve shrinkage, and fear of death (Edwards 1984). Psychoanalysis of this cultural syndrome links the cultural with the psychological using the Freudian cultural notion of the castration complex where one unconsciously fears penile loss originating in the phallic stage of sexual development; in other words, according to a psychoanalytic approach, some aspects of the castration complex are manifest in the *koro* sickness (Edwards 1984). These studies of *white liver disease* and *koro* demonstrate the emphasis that psychoanalytic approaches place on relating cultural notions of self to unconscious psychological understandings.

The psychoanalytic interpretations presented in this study demonstrate the complexity of understanding cultural syndromes. Consequently, if a research methodology is weak it can be

difficult to extrapolate the actual emic and etic meanings of cultural syndromes. One weakness of the psychoanalytic approach is the assumption that all individuals within a given society have similar psychological profiles shaped by their common cultural setting. However, this approach fails to account for the individual cultural variability that is present in any society; without addressing individual cultural syndrome differences it becomes difficult to study a cultural syndrome. Psychoanalytic methodology neglects to compare cultural syndrome cases in a society to other individuals in the same society who do not have the illness; instead, it only gathers case histories of individual cultural syndrome sufferers for analysis. This can be accomplished through a case-control study that compares individuals with the illness to individuals without the illness. Beyond analyzing individual cases of cultural syndromes for the sake of research interest alone, it is more practical, and more helpful to the individuals at risk, for researchers to take an epidemiological approach in order to identify particular risk factors for an illness. The lack of a theoretical understanding of intracultural variation by the psychoanalytic approach, as well as the incomplete nature of its methodology, exemplified by the failure to include cases of non-cultural syndrome sufferers in its analyses, suggest that alternative approaches are needed for the study of cultural syndromes.

Interpretive Approaches to Cultural Syndromes

The interpretive or cultural constructivist approach to understanding cultural syndromes represents a large percentage of the cultural syndrome literature. This particular literature can be organized into three main categories: emotional interpretation, meaning centered, and interpretive categorization. Emotional interpretation studies focus on understanding the linkage between human emotions and cultural syndromes. Human perception studies are concerned with how cultural syndromes are related to human perceptions of the elements present in the social

and cultural environment. Some interpretive studies have examined the association between cultural syndromes and categorization of stresses encountered by humans. All of the various types of interpretive studies seek to explain cultural syndromes in the context of cultural construction.

Emotional Interpretation

A number of interpretive studies identify a connection between emotion and cultural syndromes. The associations that have been found are generally either between cultural syndromes and generalized emotions or between cultural syndromes and emotional consequences of fright and depression. Rebhun's (1993) generalized emotion research on the cultural syndrome *nervos* in Brazil shows that emotions can vary depending on the cultural context because they represent consensus understandings of interpersonal interactions. When emotions become embodied as a cultural syndrome they can be used to gain control of certain social situations over which an individual would normally have little control (Rebhun 1993). Guarnaccia et al. (1996), in a study of emotions and the cultural syndrome of *ataques de nervios* in Puerto Rico observe that emotions must be regarded as lived experiences within a cultural framework rather than as a manifestation of the individual. In the Peruvian Andes, emotional stress has been studied for its relationship with *colerina*. Stevenson (1977) interprets *colerina* as a culturally dictated response similar to hysterical syndromes and is related to unbearable emotion that is frequently suppressed in the sociocultural context of the Andes. Additionally, emotional suppression is also attributed to *hwabyung*, an anger illness. Chung Pang (1990) ascertained that among elderly Korean immigrant women, cultural beliefs about the harmony of vital energy, *ki*, were combined with cultural perceptions of acceptable ways of emotionally reacting to intolerable life events, thereby forming the *hwabyung* cultural syndrome. These

interpretive studies highlight the connections between generalized emotional response and cultural construction.

The specific emotional responses of fright and depression are significant for their associations with cultural syndromes. For example, fright is thought to have a causal relationship with the syndromes of *susto* and *kesambet*. O'Neil (1975) suggests that fright is fundamental in the etiology of *susto*, which, according to his research, is defined as magical fright that can cause soul loss. This study explains that fright causes *susto* and that the emotion of fright is a response to the frightening event. The study conducted by Wikan (1989) in northern Bali explores the emotion of fright and its linkage to soul loss and to *kesambet*. Virtue, covert intentions, and emotion are the identified cultural elements that construct *kesambet* (Wikan 1989). Other research following an interpretive paradigm discusses depression as an important component of the etiology of cultural syndromes. Finerman (1989) found that informants in Andean Ecuador culturally interpreted stress-induced depression caused by misfortune and suffering by identifying it as *nervios*, which is another cultural syndrome demonstrating the importance of understanding cultural constructions of emotion and illness. In a discussion of illness and *dysphoria* as they relates to a wider system of meaning, Farmer and Gaines (1986) associate depression and other psychiatric symptoms with the concept of *visible saints* and illness in the Mediterranean. They examine the Mediterranean symptomology of depression as a culturally constructed notion that the nature of life is to suffer. These studies of fright and depression explain how emotional responses can create illness etiologies within cultural contexts.

Meaning Centered

Interpretive studies examine the relationship between meaning and cultural syndromes through the consideration of cultural interpretation and embodiment. The study of meaning relies on the interpretivist notion that culture constructs the meaning used by individuals to understand the causes and symptoms that they associate with illness. According to a study conducted by Cavender (1996), the cultural syndrome of *bold hives* in Appalachia is an illness that is understood locally as an uncontrollable entity. The hives were believed to attack the heart and lungs if untreated. Furthermore, the research suggests that the Appalachian interpretation of bold hives is a culturally acceptable way of explaining sudden infant deaths (Cavender 1996). Research on *nervios* in Puerto Rico by Guarnaccia and Farias (1988) seeks to understand what the syndrome means socially and culturally for the individuals who are suffering from the illness. There are many physical symptoms including headaches and nausea associated with the illness. Culturally, sufferers use the term *nervios* as a strong idiom of distress to express their concerns about emotional and physical states as well as societal and familial changes.

Human perception has also been associated with other cultural syndromes. Baer and Penzell (1993) examine the relationship between pesticide poisoning and *susto* among Mexican migrant workers and demonstrated the importance of taking human perception into consideration when performing cultural syndrome studies given that the farm workers in this particular study self-diagnosed based on their own cultural interpretation of illness. For these farm workers, the *susto* that followed the pesticide exposure tended to make them sicker and weaker than the pesticide exposure alone. Human perception was also important in a study of *tamaz* among the Tuareg of Morocco. Rasmussen (1992) defined *tamaz* as a type of culturally interpreted suffering consisting of a socially acceptable transcendence: an illness of spirit possession

impacting the heart and soul. Good (1977) describes a cultural syndrome as a cultural interpretative blending of symbols and experiences. According to his study of *heart distress* in Iran, this specific illness represents a set of experiences that are culturally interpreted using culturally defined meaning that the individual has learned from society.

Embodiment is a topic that is often cited as part of the explanatory system for cultural syndromes. Hinton [et al.] (2001) explicate *sore neck syndrome* among Khmer refugees as a cultural interpretation of panic and embodied stress. The syndrome is developed into a notion of illness after being filtered through cultural understandings of blood pressure and distress. Ware and Kleinman (1992) suggest that cultural syndromes are manifestations of cultural and somatic experience. Moreover, their study concludes that many illnesses labeled as cultural syndromes, such as *chronic fatigue syndrome*, are actually socially mediated by human perceptions of the symbolic linking of context to symptoms. Studies using human perception ideas about illness and culture tend to center on the relations between individual recognition of sickness and meaning within the cultural context.

Interpretive Categorization

For cultural interpretivist theorists, culture is the explanatory system used by people to deal with social stress experienced because of unequal access to resources. As a result this approach comprises studies on cultural syndromes in the context of: social categorization, critical perspectives, sex role strain, and cross-cultural comparison. In the context of social categorization, Lock (1990) notes that *nerva* for a Greek woman is representative of being socially categorized as an immigrant outsider in Canada. Similarly, Rittenbaugh (1982) describes obesity as a cultural syndrome, citing evidence that in the United States the social categorization of obesity allows it to be culturally considered an illness. Critical or political

economic approaches to understanding these syndromes relate to larger structural issues, such as poverty, that create stress for individuals living in a society. Van Schaik (1989) discusses the relationship of *nerves* in eastern Kentucky to the burden and stress felt by individuals when trying to meet the social roles demands of the family in the context of Appalachian poverty.

Understanding the categorization of sex roles in a society is important given that it dictates socially agreed upon models for individual social role expectations. Studying illness and sex roles in an Egyptian village, Morsy (1978) describes the correlation between the cultural syndrome of *uzr* and sex role strain within Egyptian society. The cultural notion of male control over agricultural productive resources limits women's access to these resources, which creates sex role strain. Consequently, females in this research were more likely to suffer from *uzr* than males. Sex role strain is also considered important among sufferers of the cultural syndrome of *susto*. O'Neil and Selby (1968) find that sex role strain or sex role expectations, as they define it, is causally related to the cultural syndrome of *susto*. They conclude that *susto* is a culturally acceptable mechanism of escape from the stress of failure to meet one's socially agreed upon social role expectations.

Other researchers take a cross-cultural approach to analyzing cultural categorization and cultural syndromes. For example, Weller et al. (2002) studied *susto* using a cross-cultural research design to determine if there were similarities between diverse Hispanic populations in terms of the causes and symptoms of *susto*. They found considerable agreement among the three different Hispanic populations in their sample on the categorization of *susto* symptoms and causes. Many informants feared *susto* because they believed that it ultimately could lead to diabetes and death. This supports the findings of other *susto* studies that identify higher mortality rates among *susto* sufferers than non-sufferers. The various studies on cultural

syndromes labeled under interpretive categorization represent studies with elements of an epidemiological research design, such as incorporating a political economic element and utilizing a cross-cultural research design. Weller et al. (2002) demonstrate that there are hints of epidemiology within the interpretative category.

Given that the interpretive orientation to cultural syndromes represents the largest number of studies, this approach has had a large impact on the collective understanding of cultural syndromes; however, there are many theoretical and methodological weaknesses present in this approach that cannot be ignored. The studies undertaken from an emotional interpretation possess the theoretical problem of defining culture in such a way that allows for the separation of group and individual agreement regarding cultural perceptions, which is problematic since the individual and group agreement cannot be separated because individual cultural perceptions are based on group agreement. The methodological problem of focusing too much on the descriptions of the emotions associated with cultural syndromes while failing to fully account for variability between individual sufferers is also apparent. Likewise, studies organized under the title of “human perception” are theoretically problematic due to the interpretivist approach that discusses context, but never convincingly relates it to individual behavior. One strong point of these studies is that the research on interpretative categorization seems to provide the strongest example of descriptive studies attempting to diversify the range of variables tested in relation to cultural syndromes. Theoretically, however, this body of work fails to fully incorporate notions of culture as both collective and individual because it only explores culture as causal instead of relational. Methodologically, the research incorporates different types of variables such as political economic or gender roles but none of the studies adequately constructs a multivariate model of the outcome of a cultural syndrome. The strength of the interpretivist approach is the

ability to gather descriptive data on symptomology, etiology, and treatment; however, this is also a weakness since intracultural diversity is present in any society. This must be addressed to entirely understand the range of possible models of cultural syndromes upon which sufferers may be drawing.

Epidemiological Approaches to Cultural Syndromes

The interpretivist understanding does attempt to include multiple variables in its descriptive analysis of cultural syndromes; however, it lacks the methodological tools that an epidemiological approach can provide. Epidemiology essentially is the study of disease and illness rates in any society, and the focus tends to be the impacts of demographic variables of a society on illness prevalence rates. Although there are some weaknesses in the epidemiological approach, these do not interfere with its success and applicability as a research methodology for studying cultural syndromes. Specifically, some of the problems with an epidemiological approach are: the difficulty of interpreting prevalence rates, the challenge of detecting that a cultural syndrome is a health problem, the lack of a cognitive definition of culture, the lack of emphasis on the biology of cultural syndromes, and the tendency to overemphasize the prevalence rates of an illness in a given population. However, the literature on the epidemiology of cultural syndromes also highlights the strengths of an epidemiologically-oriented research approach. These strengths can be organized into two sections: a theoretical section on epidemiological modeling and biological approaches including biomarkers, and a section on methodological strengths consisting of sampling strategies, demographic variables, incidence rates, prevalence studies, morbidity studies, and mortality studies. The epidemiological research orientation gives researchers additional theoretical and methodological tools that are missing from the psychoanalytic and cultural interpretivist approaches to cultural syndromes.

Theoretical Strengths of an Epidemiological Approach

As previously discussed, the epidemiological research design provides important tools for researching cultural syndromes. Rubel (1964) modified the epidemiological triad model, which includes an external agent or vector, a susceptible host, and an environment, to be applicable to the study of cultural syndromes. For Rubel (1964), the complex relations between state of health, the social system, and the personality system are the cause of the syndromes. Using the epidemiological triad model concept with the traditional modeling of disease causation, Rubel created a model for analyzing the complex relations between a cultural syndrome and susceptibility to *susto*. His model contained the elements of other health problems, gender and age specific social role expectations, self-perception of fulfillment of social role expectations, and individual capacity to respond to inadequacies in meeting social role expectations (Rubel 1964). The utility of incorporating theoretical concepts from epidemiology into a cultural syndrome research design was clearly demonstrated through his use of the epidemiological triad model to study illness.

The epidemiological perspective can easily be combined with other theoretical stances such as a more biological approach to understanding cultural syndromes; a few studies have examined the association between biology and cultural syndromes. Carey (1993) took anthropometric measurements of sufferers of *manchariska* fright illness in the Peruvian Andes, and Bolton (1981) studied hypoglycemia and *susto*. By combining his biological measures of stature and weight with other variables that he collected, Carey (1993) was able to predict the morbidity patterns associated with *manchariska*. This diversified his model for understanding morbidity patterns as they related to cultural syndromes in the Peruvian Andes. Bolton (1981) collected blood glucose measurements to determine whether individuals were hypoglycemic.

Using this data he determined that individuals with high levels of aggressiveness, a symptom of hypoglycemia, actually were hypoglycemic and therefore more likely to have had *susto* than normoglycemic individuals. The approaches of Carey (1993) and Bolton (1981) reveal that epidemiological methods can be usefully combined with biological theories of human physiology to further explain the variance observed among cultural syndrome sufferers.

Methodological Strengths of an Epidemiological Approach

The specific epidemiological sampling methods and unit of analyses used in the data collection and analyses of research are useful for identifying and describing the differences between cases and non-cases of cultural syndromes. Epidemiological researchers investigating prevalence rates have used random stratified sampling (Carey 1993) and multistage probability sampling (Guarnaccia 1993). In a study in the Peruvian Andes, Carey (1993) looked at *manchariska* using simple random sampling . He utilized a street map and assigned random numbers to each of the 56 blocks formed by the streets, and then he selected 40 blocks randomly from the map to comprise his interview sample.

A major methodological advantage of using epidemiological orientation toward the study of cultural syndromes is that multiple demographic variables such as age, gender, level of education, area of residence, marital status, and employment status can be examined for their association as risk factors of a cultural syndrome. These demographic variables also provide the researcher an indication of the socioeconomic status of those in the research sample, which is useful when comparing individuals in the sample. In a study of *ataques de nervios* in Puerto Rico, Guarnaccia (1993) collected data on basic demographic variables and compared it to sufferers of *ataques de nervios*. He found that female individuals over the age of 45 with less than a high school education, and who had been formerly married, were in an increased category

of risk for developing *ataques de nervios*. In another study using demographic variables to study cultural syndromes, Trotter et al. (1989) analyzed *caida de mollera* in a sample of informants from the Southwestern United States. The frequency of *caida de mollera* was low in populations in Presidio, Texas, and high in populations in Tucson, Arizona, meaning that there was considerable variation in frequency of *caida de mollera*. These two studies show the utility of collecting extensive demographic data to explain which factors may place certain segments of the populations at increased risk for developing cultural syndromes.

Epidemiological research is concerned with calculating the prevalence rates of specific cultural syndromes in various societies because, theoretically, this rate gives a researcher an assessment of the frequency of the syndrome in a population. In research on *nervios* in Guatemala, Davis and Low (1989) calculated lifetime incidence rates and found that 322 of their sample of 515 individuals, or 62.5 percent reported having *nervios*. Although, Davis and Low (1989) did not calculate a true prevalence rate for *nervios* because their data was not intended to represent the entire population in Guatemala City, their data does show that it is useful to describe how common an illness is in a population. Other researchers studying *nervios* in Puerto Rico also have calculated prevalence rates. Barlett and Low (1980) found that the prevalence rate for *nervios* in Paso, Puerto Rico was 25 percent, and 33.3 percent in Toco, Puerto Rico. Additionally, they demonstrated that the prevalence rate of *nervios*, which they showed to be related to social stress in the rural communities, can be used to assess the impact that social stressors can have on individuals living in rural communities. A study of *saladerra* in the Peruvian Amazon used prevalence data to estimate both the impact that a particular healer had on a community as well as the percentage of the population in the community that sought treatment for *saladerra* from this healer (De Rios 1981). De Rios (1981) found that the healer saw

46 new clients representing 39 percent of the population in the community, that in one month 10 out of 46 cases treated by the healer were for *saladerra*, and that the healer sees an average of 50 cases per year, or 0.04 percent of the population. These statistics described the cultural syndrome frequency in the community and the level of impact that a particular healer has on the community. The prevalence rate gives researchers the ability to discuss an illness in terms of a community level assessment of the problem, instead of an individual level problem.

Researchers using epidemiological methods have assessed the level of burden that a cultural syndrome places on a given population through looking at rates of morbidity and departure from physiological well-being. Trotter (1982) examined the community morbidity patterns of *susto* among Mexican-Americans in Texas to understand how *susto* related to home treatment and to other cultural syndromes found in the community. *Susto* represented three percent of all the cases in the sample, making it the ninth most prominent morbidity problem in home-treated ailments and two-and-one-half times more frequent than other cultural syndromes (Trotter 1982). The study further suggests that *susto* is common for the Texas community and that it is treated less often in the home than are other cultural syndromes. Carey's (1993) study on *manchariska* in the Peruvian Andes used morbidity as a variable for analyzing syndromes as an outcome. Using various morbidity measures, he found a link between these syndromes and general morbidity patterns (Carey 1993). Unlike an epidemiological study, an interpretive descriptive approach would not have been able to discuss the morbidity patterns of *susto* or *manchariska*, which is a useful indicator of the saliency and virulence of a cultural syndrome in a community.

Another type of epidemiological rate that can be calculated is mortality, which is defined as the frequency of deaths in a population over a given time period. The advantage this gives a

researcher is being able to show that having a cultural syndrome places one in an increased category of risk for death. In a study of three communities in Mexico, Rubel (1984) hypothesized that sufferers of *susto* were more likely to have higher rates of mortality and to be sicker than non-sufferers. Rubel's study of *susto* in Mexico built a longitudinal element into the research design which allowed him to follow up on *susto* cases to determine whether sufferers had died from *susto*. Higher mortality rates were found among *susto* sufferers than non-*susto* sufferers. Rubel's description of *susto* is enhanced by his choice to incorporate epidemiological measures such as a mortality rate in his cultural syndrome analysis.

Other epidemiological medical anthropologists have also incorporated incidence rates into their analyses. Incidence rates are a measure of the rate of new cases in disease-free individuals over specified time period (Weller et al. 1991).] In an investigation of *artic hysteria*, Foulks (1973) utilized incidence rates of *artic hysteria* among native Alaskans to rates of other mental disorders between non-native Alaskan and native Alaskan populations. He illustrated that the incidence rates of neurosis, personality disorders, and depression among native Alaskans are much higher when compared with rates among non-native Alaskans (Foulks 1973). Further, Foulks (1973) concludes that higher incidence rates of certain mental disorders place individuals in additional categories of risk for developing cultural syndromes. Weller et al. (1991) used incidence rates for studying *empacho* in Guatemala to enhance interpretation of the disease burden of the illness in the population. Using incidence rates and demographic variables, they predicted the expected frequencies of *empacho* among children and adults of both genders. These epidemiological statistics suggest that in Guatemala *empacho* occurs in similar proportions in both adults and children. The studies of *artic hysteria* and *empacho* reveal that

epidemiological methods can be employed in a variety of cultural contexts to aid in better understandings of cultural syndromes.

Weaknesses of an Epidemiological Approach to Cultural Syndromes

Despite the overwhelming usefulness of theoretical and methodological concepts from epidemiology in research on cultural syndromes, there are some weaknesses that researchers need to be aware of when utilizing this approach. Prevalence rates are useful for understanding the burden a particular illness has on a population, but they are often difficult to interpret in relation to cultural syndromes. Prevalence rate data collected by epidemiologists or research-oriented biomedical physicians can be problematic, as Rubel (1964) cites, because sometimes these researchers find it difficult, based on the physical data, to agree with the members of the population that a health problem even exists. Researchers have discussed their difficulty with organizing the epidemiological prevalence rates and other descriptive data into what Rubel refers to as “chains of inference,” so that it is meaningful to both the researcher and the informants.

A notion of culture is important in any medical anthropological research orientation, including the epidemiological perspective. However, in much of the epidemiological medical anthropological literature on cultural syndromes “culture” is still used as an explanatory variable. Outdated notions that fail to connect culture and individual behavior weaken the epidemiological research design employed by these medical anthropologists. Another weakness of this particular approach is that despite multiple studies of cultural syndromes using epidemiological methods, few studies have included biological variables such as anthropometric measurements or blood glucose levels in their research designs. The lack of exploration of biological variables in relation to epidemiological studies of cultural syndromes presents an area that needs further research (Browner et al. 1988). The cultural syndrome epidemiology literature overemphasizes

the importance of population level variables such as prevalence rates and often neglects additional analyses that would include individual cases. It is important for the epidemiological medical anthropologist to develop research designs that incorporate both population and individual level variables. To address many of the problems with epidemiological approaches cited here, Rubel's (1964) suggestion of the three systems approach is most useful. According to Rubel (1964), the research design must address: (i) the state of health of an individual, (ii) the social system of which the individual is a member, and (iii) the personality system of each individual. Essentially, it is necessary to incorporate biology and culture into research design. In recent times, this approach is called biocultural medical anthropology.

Biocultural Approaches to Cultural Syndromes

The biocultural approach in medical anthropology blends many of the descriptive elements of an interpretivist approach and the methodological tools of epidemiological analysis to create a theoretically and methodologically sound research orientation. Browner et al. (1988), in a discussion of the state of cross-cultural research in medical anthropology, cite one of the more important concerns of the field of medical anthropology: the need to combine biological and cultural perspectives. They further highlight the need to gather cross-cultural data that is comparable, externally assessable, and meaningful for informants (Browner et al. 1988). When a biocultural approach is applied to the study of cultural syndromes, the objective is to comprehend how psychological, sociocultural, and biological processes interact to generate symptoms and behavioral changes that conform to the culturally agreed upon model for cultural syndromes (Browner et al. 1988). The suggestions for strengthening research designs, as outlined by Browner et al. (1988), are all addressed and embodied within a biocultural medical anthropological framework. The biocultural perspective combines the theoretical notions of the

interrelationships between culture and biology, the methodological choices of mixing qualitative and quantitative methods with specific sampling strategies, and precise tools of analysis. In this section, the theoretical and methodological strengths of the biocultural viewpoint will be discussed as they relate to specific cultural syndrome research.

In “What’s Cultural about Biocultural Research?,” Dressler (2005) describes the biocultural framework as a tool that allows the researcher to show how collective and individual meaning relate to individual behavior in the context of an illness. Other researchers, such as Guarnaccia and Rogler (1999) suggest that further research on cultural syndromes must integrate cultural and clinical knowledge. A biocultural analysis of these syndromes allows for collective and individual meaning to be studied as they relate to individual behavior and social stress. The biocultural medical anthropological perspective shows that each cultural syndrome is not necessarily unique, but instead is a complex notion of meaning related to the way an individual tries to adhere to cultural models in his or her life, along with the physiological consequences of failure to adequately enact those models.

The theoretical strengths of a biocultural approach can be organized into: a biology and culture paradigm, inter and intracultural diversity, and biomedical recognitions of cultural syndromes. The categories of useful methodological assets include: interpretive approaches, epidemiology, use of psychiatric instruments, research design, sampling, and data analysis. The biocultural approach resolves several of the problems associated with psychoanalytic, interpretivist, and epidemiological research agendas; however, it is not immune to theoretical deficiencies such as inadequate definitions of culture and lack of political economic considerations. However, with the exception of these deficiencies, the biocultural orientation

gives the researcher the greatest command over the tools of epidemiological data collection and analysis through use of a unified holistic folk, social, psychological, and biological perspective.

Theoretical Strengths of a Biocultural Approach

A theoretical strength of a biocultural approach is the integration of the biology and culture paradigm. Studying cultural syndromes from a dual perspective of biology and culture allows the researcher to untangle the complex physiological and social relationships of sufferers. In a study of *debilidad*, Oths (1999) discovered that from a biological perspective post-reproductive women with a higher frequency of pregnancies and miscarriages were more likely to suffer from *debilidad*. She also found that when *debilidad* cases were further analyzed from a sociocultural orientation, individuals living in the same households as the post-reproductive women with *debilidad* were at a greater risk for developing *debilidad*. In one out of three households, one woman suffered from *debilidad*; furthermore, 82 percent of all cases of *debilidad* in Chugurpampa, Peru were found in these same households. This research study demonstrates the importance when studying cultural syndromes of utilizing a perspective that simultaneously considers biological and cultural variables.

In considering another cultural syndrome's relationship to biologically influenced elements, stress and depression, Weller et al. (2008) examined *susto* and *nervios* as comorbidities due to stress. Their research demonstrates the application of a biocultural approach to research design; they used the Cohen's Perceived Stress Scale and the Zung Depression Scale to assess the biology of stress and depression in relation to *susto* and *nervios*. With the same research design, they also collected data on sociocultural variables using self-reported cultural syndrome histories, determining that *susto* and *nervios* may be indicators for severe depression and stress (Weller et al. 2008).

The study by Oths (1999) and the work of Weller et al. (2008) exemplify the theoretical understanding that biology and culture are interrelated, which is a fundamental concept of biocultural medical anthropology. Studies of cultural syndromes emphasize the need for understanding intercultural and intracultural variation within any social group. Some researchers refer to these same concepts as emic and etic notions of sociocultural phenomena.

With a biocultural theoretical stance a researcher can address intercultural and intracultural diversity. Accordingly, Baer et al. (2003) cross-culturally compared and analyzed *nervios* to assess intercultural and intracultural diversity by looking at regional variations in descriptions of *nervios*, finding intracultural agreement among each of the four samples on a core of *nervios* descriptions as well as intercultural agreement among the four samples on *nervios* as a broad category of illness associated with continual stresses. The notion that intercultural and intracultural diversity exists across societies is not new; however, only a few other biocultural approaches, such that used by Dressler (2005), have been able to detect cultural variations at this level of analysis.

One important part of the theory of biocultural medical anthropology is its emphasis on attempting to understand the complex relationships between biological and cultural variables in order to determine how these associations might relate to outcomes. To further the biocultural understanding of illnesses some researchers have examined the connection between biomedically defined nosologies and cultural syndrome symptoms. In a study of *caida de mollera*, Baer and Bustillo (1998) collected information from Mexican and Mexican-American mothers who had treated their children for *caida de mollera* and interviewed physicians about the symptom sets associated with the cultural syndrome. Based on the physicians' ratings that most of the *caida de mollera* symptom sets were life-threatening, the researchers concluded that there are biological

causes associated with *caida de mollera* (Baer and Bustillo 1998). In another biocultural study, Baer and Bustillo (1993) examined the relationship between biomedically defined symptoms of *susto* and *mal de ojo* such as fever and skin rash finding that the symptoms of children suffering from *mal de ojo* resembled those of sufferers of biomedically defined life-threatening conditions such as sepsis. This research is essential in demonstrating that biomedicine can be utilized for its knowledge of human biology to aid cultural syndrome researchers. The studies by Baer and Bustillo (1993,1998), when considered along with the biocultural research described earlier in this paper, help to illustrate the theoretical advantages a biocultural approach can offer to cultural syndrome research.

Methodological Strengths of a Biocultural Approach

From a methodological standpoint, a biocultural orientation borrows descriptive techniques from interpretive medical anthropology and combines them with epidemiological research designs and methods. Oths' (1999) research design in her work on *debilidad* utilizes a balanced mixture of interpretive and epidemiological methods by using open-ended interviews to elicit general household demographics, illnesses and other information about symptoms and causes of *debilidad*. The data is then transformed into variables that can be quantitatively tested to determine whether they are likely to be associated with *debilidad* households (Oths 1999). In her biocultural work, Oths (1999) stresses the importance of using an appropriate combination of qualitative and quantitative methods. The ability of biocultural medical anthropology to readily incorporate qualitative and quantitative methods is a tremendous strength of this research methodology.

More specifically, many of the methods of biocultural medical anthropology are borrowed from epidemiological studies. Baer and Bustillo (1998) recommend that cultural

syndrome researchers use a research design that includes folk, psychological, social, and biological elements. Because biocultural research design incorporates all of these elements, its effectiveness for studying cultural syndromes is further supported. In biocultural literature many researchers choose to address the psychological and biological components discussed by Baer and Bustillo (1998) by incorporating research instruments that have been developed specifically to efficiently elicit key features of cultural syndromes from informants. Oths (1999) proposes that biocultural researchers use psychiatric instruments as part of their cultural syndrome analysis. In a study of the cultural syndrome *ataques de nervios*, Lewis-Fernandez et al. (2002) used the Explanatory Model Interview Catalogue (EMIC) and the Structured Clinical Interview for DSM-III-R as comparable psychiatric variables. These research instruments were specially designed to collect data on *ataques de nervios* and on overall psychiatric profiles, respectively, and were chosen for their capacity to strengthen the overall biocultural profile of *ataques de nervios*.

The imprint of epidemiology on biocultural medical anthropology is most evident in the type of sampling strategies used in biocultural research of cultural syndromes. A biocultural study of *chocake* in the Peruvian Andes by Brooks (2007) employed a case-control sampling strategy from epidemiology for which cultural syndrome cases were matched against non-cultural syndrome cases. This sampling strategy is efficient and allows the researcher to control for various demographic variables such as gender and socioeconomic status within the actual data collection strategy, eliminating the need to control those variables again in the data analysis. In addition to epidemiological sampling strategies, biocultural researchers also use hypothesis testing to narrow the range of possible explanations for the biological and cultural connections embodied in cultural syndromes. While studying *chocake*, Brooks (2007) tested various

hypotheses regarding the relationship between household levels of social stress and *chocake*, which allowed him to suggest that higher levels of social stress place individuals into higher category of risk for *chocake*. In a different cultural syndrome study, Oths (1999) used hypothesis testing to examine the relationship between household sex-ratios and *debilidad* and found that individuals living in households with a sex-ratio imbalance were placed into a higher category of risk for *debilidad*. The work of Brooks (2007) and Oths (1999) demonstrates the importance of hypothesis testing for the development of a biocultural understanding of cultural syndromes.

Data analysis techniques are another important strength of the biocultural perspective. A variety of data analysis techniques used in biocultural medical anthropology have been borrowed from epidemiology and cognitive anthropology. Oths' (1999) work on *debilidad* utilizes an epidemiological data analysis technique to compare *debilidad* and non-*debilidad* households using the household level variables of sex-ratio, total number of pregnancies, and total number of offspring lost. She was able to demonstrate using t-tests that there were significant differences between *debilidad* and non-*debilidad* households in regards to these three variables (Oths 1999). Another data analysis technique that embraces a biocultural approach to understanding cultural syndromes is consensus analysis, which has been borrowed from cognitive anthropology. Baer et al. (2003) employed this method of data analysis in their cross-cultural study of *nervios*. Using consensus analysis to look at group agreement on structured questions they noticed the presence of a shared system of knowledge about *nervios* in each of their samples of respondents. The research by Oths (1999) and Baer et al. (2003) on the applicability of various data analysis techniques to biocultural medical anthropology supports the notion that the most productive orientation to cultural syndromes is a biocultural one.

Weaknesses of a Biocultural Approach to Cultural Syndromes

The literature on biocultural research in cultural syndromes discussed in this paper demonstrates the multiple strengths offered by this understanding of biology and culture; however, there are always potential weaknesses in any research agenda. Much of the work on biocultural medical anthropology is impeded by an inadequate definition of culture. However, this is not surprising since much of the cultural syndrome research using psychoanalytic, interpretivist, or epidemiological approaches is also plagued by difficulties in understanding culture. The biocultural orientation in medical anthropology could be improved by a better understanding of culture that adequately links culture to individual behavior. While the theory of cultural consonance, inspired from cognitive anthropological notions of culture, addresses individual behavior and culture, little research has been done on its applicability to cultural syndrome studies. Biocultural research on cultural syndromes is also criticized for its lack of consideration and incorporation of a political economic perspective to cultural syndromes. With the exception of Oths' (1999) study of *debilidad*, there has been little cultural syndrome research that uses a political economically informed biocultural approach. The inadequate definition of culture and the lack of political economic variables in the biocultural approach to cultural syndromes suggest two areas for further research on cultural syndromes.

Biocultural Incorporation of Cultural Consonance

In order to address the need for a better cultural definition and an incorporation of political economic variables in biocultural research on cultural syndromes, I conducted research on Andean social role consonance and *susto* in Peru. My purpose was to use the cultural consonance model to explore social role stress, physical well-being, and *susto*. A cultural consonance model is one that relates individual behavior to culturally agreed upon models for

specific cultural domains. Cultural consonance is the degree to which individuals approximate in their own behaviors the shared elements of a given cultural domain (Dressler 2005). This model links culture to individual behavior by eliciting agreed upon group cultural models and individual models for a given domain. These models may then be compared to better understand how they are impacting individual behaviors in society.

The cultural consonance model approach also contains political economic elements for understanding how an individual relates to a group. Since cultural consonance looks at individual behaviors in relation to society it can determine whether or not an individual is living in accordance with the shared group models of the given cultural domain, regardless of whether the individual is actually suffering due to this reality. Biocultural researchers such as Dressler (1993, 1999), using the cultural consonance model to study blood pressure in Brazil and the United States, have shown that frequently the socioeconomic reality is not caused by a lack of cultural knowledge of the model but instead by an individual's lack of the necessary resources to attain consonance with members of society who are able to enact the shared model. Dressler's (2005) research in blood pressure measurement demonstrates that not being culturally consonant in several cultural domains can be physiologically detrimental to one's health and well-being, thereby causing high blood pressure and increased risk for cardiovascular disease. The cultural consonance model is useful in understanding how political economic structural conditions can influence an individual's behavior and physiology. The research on cultural consonance suggests that further work needs to be done on measuring cultural consonance in other domains. Since Oths (1999) and others have already shown that Andean social roles are essentially connected to cultural syndromes, and the cultural consonance model addresses the weaknesses in

previous biocultural cultural syndrome research, I suggest that biocultural medical anthropology would benefit from research on cultural consonance in Andean social roles as it relates to *susto*.

Chapter 3: The Ethnography of the Callejón de Huaylas of Peru

The Andean mountain range is the world's longest and steepest, and also the highest next to the Himalayas of Asia. Stretching over 4,000 miles north to south along the Western edge of South America, it encompasses Argentina, Bolivia, Chile, Colombia, Ecuador, Peru, and Venezuela (see figure 1). The highlands of Peru are characterized by a series of valleys formed by the Cordillera Blanca, the White Mountains to the east whose highest peak is Huascarán, and the Cordillera Negra, the Black Mountains to the west. These two portions of the Andean mountains form the Callejón de Huaylas, which is an extremely narrow valley only five miles across at its widest part and 125 miles long (see figure 2) (Bode 1989). To reach the Callejón de Huaylas in the department of Ancash, located at an elevation of 10,000 feet, one must fly into the *Aeropuerto Internacional Jorge Chávez*, in Lima, Peru's capital. From there, one embarks upon an eight-hour bus ride through diverse geographical topography including coastal lands where much of the country's export crops are produced, dry arid terrain where little grows and few towns are encountered, and finally, into the foothills of the Andes, where the bus takes its passengers steadily higher in altitude along a nauseating stretch of switchbacks and gravel roads. The passengers arrive in Huaraz, the capital of Ancash, which is the most

populous area they have seen in hours and also the site of one of the most important central markets in the valley. Surrounding this vital city, at altitudes of 11,000 to 13,000 feet, are many small, rural communities whose inhabitants speak Quechua and Spanish. Their main subsistence strategy is small-scale agriculture and craft production. Although each community has unique characteristics, they share the commonalities of a voracious work ethic and a terrible past and present of historical, economic, political, and social exploitation (Doughty 1968, Oths 1999).



Figure 3.1: Map of South America

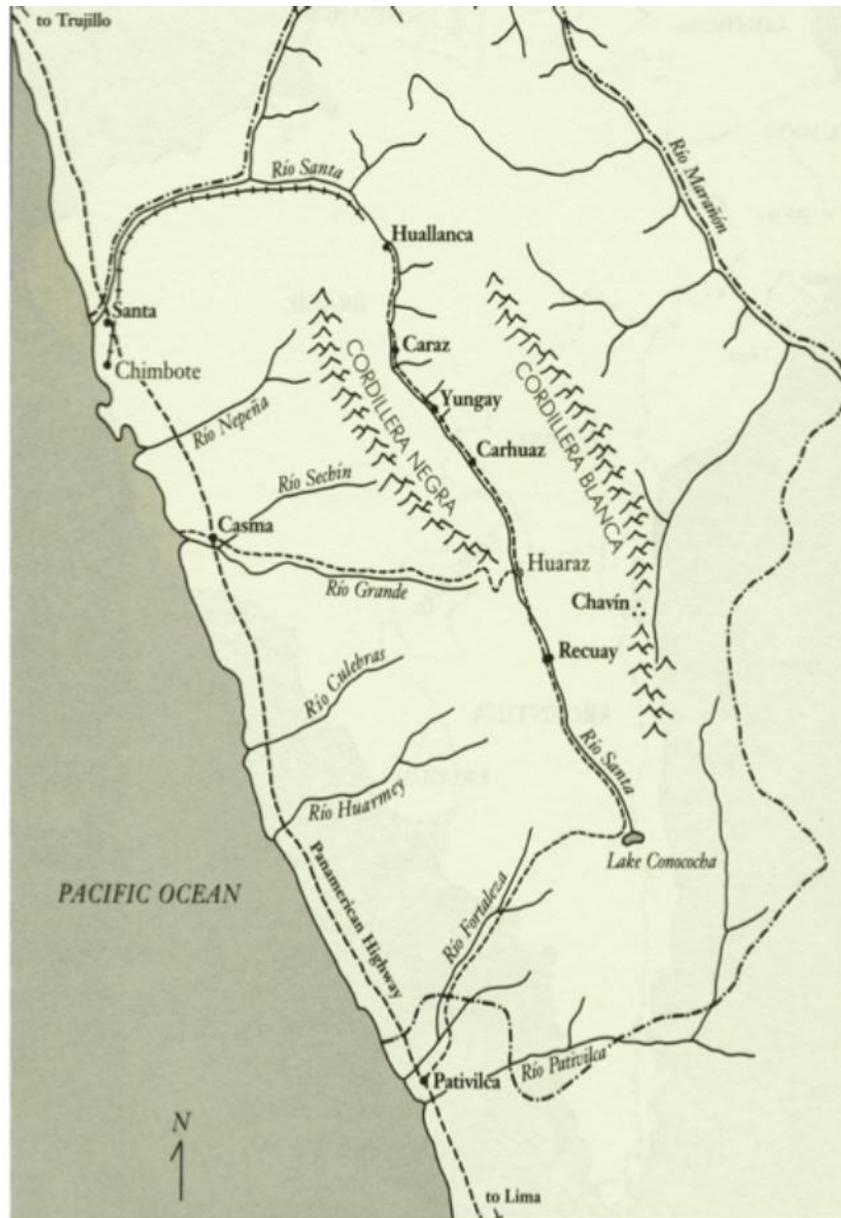


Figure 3.2: Map of Department of Ancash (adapted from Bode 1989)

History of the Callejón de Huaylas

The history of the Callejón de Huaylas and its north central highland inhabitants is riddled with economic exploitation and social strife (Mumford 1998). According to the archaeological record, the valley was dominated by pre-Incan groups such as the Wari who left

behind the ruins of Wilkawain; however, between 1463 and 1471 the Incans arrived and incorporated the valley into their vast empire. Continuing this trend of domination, the Incan oppressors were replaced by the Spanish when Francisco Pizarro and his company of explorers arrived in 1533 (Mumford 1998). According to their census, 3,000 highlanders were living in the Callejón de Huaylas at the time (Doughty 1968). Huaraz was among the first towns established by the Spanish, dating to 1550, and served as the site of regional government. The Spanish divided the highlanders into upper and lower sectors based upon their consanguineal kinship group --or *ayllu*-- which was associated with specific geographic places of origin (Doughty 1968).

In 1821, with the war of emancipation in progress, José de San Martín, a leader in favor of liberating Peru, issued decrees giving the highlanders full citizenship in the new Republic. Prior to 1823, the Spanish exerted control over the highland populations by establishing *reducciones* (towns or reservations) and forcing European cultural and religious assimilation on the people. When Simon Bolívar came to power in 1823, he started a movement to abolish the *reducciones* system in hopes that land ownership rights would be given to the Andeans. Despite his efforts, this vision never came to fruition and control of the land was taken by the local *caciques* who greedily exploited the people who had formerly lived on the *reducciones* (Stein 1985). Eventually, highlanders began to gain some power through resistance movements. Indigenous leader Pedro Pablo Atusparia led the *Revolución campesina* (Campesino Revolution) in 1885, during which thousands of Native Americans joined to overthrow the Spanish-imposed rulers of Huaraz who were forcing them to pay unjust tributes. The highland vigilantes, known as the Azules, were another group that rose up to protect the rights of the indigenous people at that time (Doughty 1968). The people of the valley were liberated from the Spanish crown as a

result of the Peruvian War of Independence, which ended in 1824, only to be subjugated by the European-influenced Republic of Peru. Under this new government, the highlanders suffered a lack of autonomous political power and continued to be marginalized.

In parts of Peru there were population shifts between 1876 and 1940. The 1940 census revealed that the population of the highlands around the Callejón de Huaylas was becoming less *mestizo* (mixture of white and Native American ancestry) and more “indigenous” (exclusively Native American ancestry) (Turner 1997). The shift in population composition was identified in several parts of the Peru. Ethnographers described the trend as the creation of “ethnogeographical islands,” one in the north surrounding the Callejón de Huaylas and another in the south between Huancayo and Puno (Turner 1997). The highlands in these areas becoming more “indigenous” contributed to further marginalization in Peruvian society.

The geographic isolation and distance of the Callejón de Huaylas from the urban centers of the coast kept the valley relatively unchanged for a period of time. Unfortunately, from 1889 to the early 1900s, the history of the valley is sparsely recorded, but in the second half of the Twentieth Century, two major events have been widely documented due to their extensive impact on the Peruvian population: the simultaneous earthquake and avalanche that occurred in Ancash on May 31, 1970 (commonly referred to as *el terremoto de 70*) and the nation-wide *campesino* uprising of the *Sendero Luminoso*, the Shining Path, during the 1980s. These two devastating events shape much of the historical trauma experienced by the last few generations of people in the valley.

Historical Traumas

The Callejón de Huaylas valley is a case study of the historical, political, social, and economic dimensions of Peruvian Andean living. The productive and reproductive capacities of

Andeans are embedded within the developing society of Peru. In the highland hamlets, Andeans have adapted to changing sociopolitical and economic situations by increasing their reliance on strategies such as market-oriented agriculture, gender roles, and the household unit. The Quechua and Spanish speaking highland populations of the Callejón de Huaylas have developed cultural models for dealing with social stressors, such as economic hardship, and thus are able to survive in Peru under harsh conditions of social stress.

The stress impacting Andean farmers can take on many forms and in some cases may become chronic stressors similar to poverty and malnutrition (Oliver-Smith 1986). Historically traumatic events seem to be of particular importance in how informants understand the world that surrounds them. Highland informants in the valley describe six major culturally salient events of importance; however, due the diverse geography of the valley some Andean hamlets may have been more or less impacted by particular historic events. Community members in Jahua and its surrounding hamlets discussed the devastation cause by the flood of 1988. The flood was caused by a mining accident at the gold mine located above the hamlet of Jahua. A dam associated with the gold mine broke and caused massive flooding to the areas directly below the mine. The event cause emotional damage to many farmers who were frightened by the flood. It also caused massive devastation to the wheat crop fields in the area, leading to total crop failure for some farmers. The cholera epidemic that spread across most of Peru during the 1990's had some impact in the valley, especially in larger urban areas like Huaraz. The water borne illness was spread through social conditions such as living in unsanitary and highly congested areas. The cultural practice of eating *ceviche*, which is a salad-type dish consisting of various kinds of raw seafood, contributed to the outbreak by bringing the infected fish from the Pacific Peruvian coast into the highlands (Joralemon 2006). The harvest freeze of 2008 was

another influential event. Many farmers lost crop harvests due to the late freeze that occurred in the mountains. Informants described their fields after the freeze as appearing as if the crops had been blackened and burnt.

On May 31st 1970, the town of Huaraz was mostly destroyed by an earthquake (*terremoto*) and has been in the process of rebuilding since that year. In addition, the earthquake caused ice to break away from Glacier 511, the Leprince Ringuet glacier on top of the valley's tallest peak of Huascarán, which created an avalanche that destroyed the town of Yungay located 20 miles from Huaraz (Bode 1989). Following the event it would take 4 days for any kind of aid to arrive in the area. Many areas including Huaraz had buildings and homes destroyed by event. People discussed the trauma associated with burying the thousands of dead (Oliver-Smith 1986). The reconstruction process was challenging because aid and government agencies wanted to destroy buildings and were not aware of the emotional attachments people had to areas impacted the earthquake. Many people feared leaving the area because they did not want to abandon the dead. The area has changed as people have begun to adopt the identity of earthquake survivors. Yungay has become important for tourism in the area, as people want to visit the epicenter of the natural disaster (Oliver-Smith 1986).

Following these natural events, informants described the changes in Huaraz as a transformation. New buildings were erected and displaced individuals, numbering 60,000 from Yungay and other hamlets, came to Huaraz for refuge (Stein 1985). Highlanders were given a voice in the reconstruction process because Peruvians began to value the new identity of survival. Construction continued in the valley until 1999 and the Peruvian government and aid

groups built homes for displaced individuals. However, most of the rebuilding of homes and agricultural water systems was completed by the highland community members through the process of communal organizations associated with the identity of surviving the earthquake.

In the late 1980's, highlanders living in the Callejón de Huaylas valley began to be affected by the uprising of the revolutionary group *Sendero Luminoso*, the Shining Path, and other government opposition groups, which began as armed political conflicts in the town of Ayacucho and spread throughout Peru (Carey 1993). The ideology embraced by the Shining Path was not new and can be associated with other earlier political movements in Peru during the 1960's; however, its brutality was unparalleled. Abimael Guzmán, a university philosophy professor who had been greatly influenced by Maoist doctrine, founded the Shining Path movement (Roncagliolo 2007). Guzmán taught at San Cristóbal of Huamanga University in Ayacucho where many of the students were open to embracing new more radical ideologies. During the 1970's it began to spread its influence through the university communities in Peru becoming popular in the National University of Engineering in Lima (Roncagliolo 2007). However, over time its presence in the universities of Peru began to decline.

The movement gained momentum among neglected disenfranchised highlanders who lacked connection with the central Peruvian government and sought popular justice. The group was responsible for many civilian deaths as it began to move for the purposes of recruitment from the areas surrounding Ayacucho, to the Callejón de Huaylas and other Andean valleys. Its impact in the Callejón de Huaylas were significant but often times less dramatic than in other areas of Peru closer to the epicenter of the conflict. Highlanders in the valley discuss when the terrorists “*volaban las torres de alta tensión*” (“knocked down the high voltage transmission towers”), associating it with the arrival of the Shining Path in a hamlet. First they would destroy

the local power infrastructure and impose curfews forcing people to stay inside. The highlanders said they were unable to go out at night (“*no se podía salir de noche*”) because of violence. They characterize the Shining Path as “*los terrucos*” (the terrorists) who killed community authorities (“*andaban matando autoridades*”) and made people disappear (“*desaparecieron las personas*”). It was common practice for the Shining Path in some parts of Peru to force farmers to choose between joining their army or being killed (Roncagliolo 2007). Some highlanders took advantage of the situation and tried to deceive other community members into giving them goods or money by impersonating members of the Shining Path: “*había personas que fingían ser terroristas para pedir plata*” (“some people pretended to be terrorists to ask for money”). The destruction of public buildings through bombing was another common tactic used by the Shining Path.

Another topic that informants associate with the time of the Shining Path is the loss of monetary value (“*el dinero perdió su valor*”). Many highlanders remember this as “*el tiempo de Alan*” (“the time of Alan”). Alan Garcia was the president of Peru during the later time of the conflicts with the Shining Path. And he was acting president during the time when this research was conducted with many highlanders describing feelings of distrust toward his government. The late 1980’s saw the worst inflation where rates topped 1600 percent in three months creating devaluation of the Peruvian currency (Oths 1994). Many Peruvians use this characterization to describe the rapid inflation experienced by the economy during the mid to late 1980’s. The rise of prices was an extreme burden on many Andean households where prices would double by the day and week (Oths 1994). The cost of basic staples like cooking oil and sugar, as well as medical treatment, dramatically increased during this time, directly impacting Andean

households. The inflation created a social environment of economic poverty from which highlanders are still in the process of recovering, given that they live in a cash-based.

The Shining Paths' attempts to gain control over the valley were met with some organized *campesino* resistance (Guzmán 1995). With the capture of Abimael Guzmán on September 12, 1992, by the Peruvian government, the conflict began to subside. The Shining Path abandoned villages that it had previously controlled and highlanders began to resist the Shining Path movement. The communities in many parts of the Andes organized themselves into *Comités de Autodefensa Civil*, civil defense committees, and formed guarding rounds or *rondas campesinas* consisting of young men that collectively would resist the Shining Path and defend land and livestock (Pedersen et al. 2010). The group continued to perform isolated guerilla activities under the new leadership of Óscar Ramírez until his capture in 1999 (Roncagliolo 2007). The group then fractured into many splinter groups and lost much of the influence it enjoyed during the 1980's- 1990's. Following the decrease in the influence of the Shining Path, Huaraz continued to develop and become a highland town of 100,000 and the major economic center of the valley.

Callejón de Huaylas Highland Descriptions of *Susto*

There is cultural variation within the valley regarding *susto*; however, there seems to be agreement among community members that *susto* is an illness caused by an individual suffering a fright that leads to separation of the spirit. The causes of *susto* vary for children and adults. For a child it can be a loud sound such as a dog barking or fireworks that occur while the child is sleeping. In adults, a car wreck, falling out of a tree, or being chased by a bull can cause one to become severely frightened. Adults can also get this illness from involvement in a physical fight with other community members or witnessing a conflict such as those that occurred during the

time of the Shining Path movement. Diagnosis of *susto* can be performed by a *curandero* or it can be based on self-diagnosis. Although various treatments such as herbal remedies are used to cure *susto*, in more severe cases, the soul will have to be called back to the individual through a process conducted by a healer such as a *curandero* (Greenway 2002). For example, the healer interviewed for this research was a *curandero* who used a particular treatment for calling the soul back to the body. He described that at midnight a healer will take a clay pot, which the sufferer has had in his or her possession for several days, and a piece of the individual's clothing. These items will then be used to capture the soul; as the wind brings it by, it will be caught in the clay pot. At this point, the sufferer must open the pot and breathe the soul back into the body. There are other methods for calling the soul back to the body that are in practice in the valley.

The symptoms of *susto* can include many feelings associated with generalized sickness and soul separation. Healers often associate *susto* with feeling drunk, being scared, crying, having trouble sleeping, being tense, jumping during the night, feeling restless and not at peace, living in despair, losing weight, and being distracted. Informants may also experience other symptoms throughout the course of the illness.

Informants describe three levels of *susto* intensity: an initial phase of suffering, an intermediate stage, and a severe state. In the initial stage, it seems that symptoms are less severe and can include vomiting, loss of the spirit, feeling that the ground is absorbing you, and you are drying up. *Susto* intermediate symptoms are total body pain, difficulty sleeping, crying, feeling sick, and jumping in the night. The most severe *susto* cases have fever, falling to the ground, worry, loss of appetite, head pain, heart pain, nightmares, and heat in the stomach. The participants' incredibly vast knowledge about the varying levels of *susto* severity indicates that it is a culturally salient illness impacting many Andean highlanders.

Social Organization and Social Roles

Life in the Andean highlands is difficult, challenging, and physically demanding because of the living conditions of the high altitude and the heavy reliance on manual agricultural, household, and wage labor. Historically, economically, politically, and socially conditioned physical and psychological stressors have forced highlanders to adapt certain social practices to combat these stressful forces through gender roles and household unity (Oths 1999). Gender roles are differentiated by one's contributions to household production and one's contribution to the productive capacity of the household in the form of reproduction. In the Andes, production and reproduction are not distinctly different, as evidenced by highland women in the markets who can be observed performing household work in conjunction with market economic subsistence, such as performing child care duties and cooking food at home with the dual purpose of feeding the family and selling at the market (Babb 1986).

The hamlets surrounding Huaraz in the Callejón de Huaylas represent traditional *comunidades campesinas* (organized peasant communities) that involve both men and women practicing the subsistence strategies of sustaining the household and market-oriented agriculture. A *comunidad campesina* is a form of social organization that is given legal status and is reflective of the communal nature of highland communities (Weismantel 1988). These communities are important for establishing social relationships between individuals living in close proximity to one another. The *comunidad* is responsible for organizing *mingas* (communal work parties) to repair community infrastructure such as roads, irrigation ditches, and health posts. Each family in a *comunidad* has the responsibility to send a member to assist with the work group and there can be fines and other social consequences if this practice is not followed (Weismantel 1988). These types of social obligations are in addition to social

responsibilities that individuals may have from other types of social organization such as *compadrazgo* and marriage relationships. Agricultural labor is another task that is performed collectively by both men and women. It is based on household and communal organization, as other members in the community will often practice mutual exchanges of labor in the form of harvesting, planting, plowing, or pasturing (Stein 1961). Working collectively is important in the Andes whether it is participating in work groups associated with the *comunidades* or performing other types of reciprocal tasks.

The Andean work ethic is legendary; both sexes perform task production with tenacity and fierceness. Specialization among Andeans comes in two forms: agricultural tasks (separated by gender roles) and other skills. Some males bring in additional income driving a taxi and working in construction and many women enable their brothers, fathers and husbands to do these extra wage-earning tasks by performing valuable domestic chores such as cooking and caring for children. Men plow the fields and load burros for crop transportation and women contribute to working in the fields by planting and processing crops after harvesting(see figure 3.3) (Bourque and Warren 1981).



Figure 3.3 Woman Sorting Harvested Wheat

Both genders pasture animals and harvest crops (Oths 1999). Social status is acquired within the Andean communities through productive and reproductive abilities. Men may gain political

power through the cargo system (in some hamlets), specialization in skills such as plowing, woodworking, weaving, and the ability to hire out for wage labor. Women increase their prestige through economic stability, which is defined by the ability to produce offspring and the possession of the knowledge and skills for production: cooking, selling in the market, spinning, and midwifery (Stein 1961, Weismantel 1988). These ethnographic descriptions of social roles, initially collected by anthropologists in the sixties, eighties and nineties, were also observed in 2009 during the fieldwork carried out for this research.

The masculine gender role in the Andes includes the responsibilities of being a father and a husband. Males describe their paternal social role as the ability to provide a good education for their children. As Weismantel (1988) has pointed out, the image of the male as the provider seems to be common; within this model, men want to be able to provide material items, clothing, and food for their children. Throughout the interviews conducted during fieldwork, most participants expressed the opinion that the father should provide advice for his children and defend them if they are in danger. Given the necessity of terrain for farming, land inheritance is especially important in the Andes and if a father owns land, he will generally give some to his sons and daughters (Weismantel 1988). In terms of marital roles, being a good husband and not engaging in domestic abuse of one's wife is highly regarded. Having a job or providing income for the household is what enables a man to continually perform routine maintenance on the house and land.

The feminine gender role is defined by the characteristics associated with being a mother and a wife. As a mother, the Andean woman is a hard worker who takes care of and sacrifices for her children. She is most concerned about the well-being of her children and strives to treat them all equally. As a wife, she derives a lot of power from her central importance in meal

preparation (Weismantel 1988). The wife also serves as the accountant and bank for the family raising animals such as pigs, which function as saving accounts, and managing the finances of both hers and her husband's earnings. This role is crucial for creating a gendered balancing mechanism between males and females in Andean society. A highland man and woman must work together as a *yunta* (just like a team of yoked bulls) in order to survive in the harsh ecological and economic context of the Andes (Oths 1994).

Residence patterns are important in the highlands because there is a need for farmers to depend on neighbors for help with the large amounts of work associated with agricultural production. Some highlanders are envious of other farmers and may be suspicious and not trust their neighbors. However, despite the lack of distrust that may exist between highlanders they must form alliances in the face of these challenges to social order. Fictive kinships relationships such as *compadres* and marriage alliances consisting of ties to affinal and extended kin are two main ways that reciprocal relationships are established between farmers. The *compadrazgo* social system consists of establishing fictive kin relationships with individuals who will become business partners, sources for loans, and providers of agricultural labor (Weismantel 1988). The building of *compadre* relationships is a slow process. Young people begin with *padrinos* that they owe labor to and they gradually establish *compadres* ties that they can use for exchanging agricultural labor and other services. These reciprocal relationships enable the labor intensive agricultural work to be efficiently accomplished since harvesting and planting usually has to be completed on a regimented timetable for optimal crop success (Weismantel 1988). Other social bonds such as affinal and extended kin are created through marriage. These bonds involve inherent and ascribed labor obligations outside of the family members with whom one resides. Affinal kin relationships may require the husband to work in the wife's families agricultural

fields several times per season (Weismantel 1988). Social bonds with extended family members may require the couple to assist both families extended family members with agricultural work. These types of relationships are not based on reciprocity since social obligations are not necessarily exchanged mutually. Working collectively is important in the Andes sometimes whether it is participating in work groups associated with the *comunidades* or performing reciprocal or ascribed tasks for neighbors based on other types social relationships.

It was found in this research that being a good neighbor is important among highland farmers, both males and females are a part of this culturally salient social role. Highlanders have a cohesive cultural model of what constitutes a good neighbor. A good neighbor is one who plants every year and allows other neighbors to use his or her land. Planting and harvesting are extremely labor-intensive times requiring large work groups. These groups can be based on *comunidad* responsibilities (figure 3.4), extended family with marriage obligations, or neighbors that are *compadres*. Without cooperation it is difficult to effectively meet the demands of the harvest in a reasonable time frame.



Figure 3.4: Male Work Group Building a House in Jahua

Households also rely on these types of relationships to plant and harvest their crops; hence cooperation between neighbors is essential in the Andes. Inviting a neighbor for a meal in one's home cultivates these relationships and generates social cohesiveness within highland communities (Weismantel 1988).

The highland communities of the Callejón de Huaylas are remote but they are not exempt from the influence of urban areas. The term "choloization" or "being *mestizaje*" describes the impact living close to an urban area can have on Andean culture (Weismantel 2001). *Cholas* are women that are no longer labeled as Indian but are not considered white (Weismantel 2001). They may dress in traditional clothing representative of the rural highlands but work in the urban areas. These are highlanders that have come to urban areas to work and are thus exposed to different ideas about dress and social relationships. "Choloization" represents the changes that are occurring in Andean culture because of urban expansion. The younger generations of Andeans seem to have a growing desire to leave their rural homes and find new identities in the urban areas (Weismantel 2001). "Being *mestizaje*" or "*mestizo*" is also associated with influences from urban area as one's ethnic identity can change when certain ethnic markers such as traditional dress have been removed. Weismantel (2001) discusses how Andean's working in markets in urban areas were changing their identities and how they stated that they were forgetting their traditional dress. The changes that can occur when highlanders begin to spend lots of time in more urban areas are evident in the Callejón de Huaylas as elements of rural highland culture: --traditional dress, the Quechua language, and beliefs about illness-- are displaced by items indicative of urban life such as jeans and cell phones.

As described in this chapter, the town of Huaraz is the center of market exchange in the valley, and as such, many highlanders are dependent upon its produce market for economic

stability. Surrounding Huaraz, the many remote highland hamlets depend on farming as an important source of income. Highlanders have experienced many historically traumatic events, which have become normalized as sources of social stress and suffering. They recognize *susto* as a sudden fright illness and many of the *susto* occurrences are associated with historical events. The cultural model of the Andean social roles is to be hardworking, a good parent, a supportive spouse, and a helpful neighbor. These historical and social characteristics are common among highlanders living in the valley and give insight into the Andean ethnographic context. There are other elements of Andean social roles such as the influence one's occupation as healer or other highly regarded social position may have on social roles, but those discussed above were the ones identified as important by informants in valley.

The Town of Huaraz



Figure 3.5: Town of Huaraz

Since Huaraz is the first major settlement in the Callejón de Huaylas, north of Lima, it has become a major economic center; however, its most recent growth can be attributed to the mountain climbing industry. Being no more than a 2 hours drive from Huascarán and Alpamayo, two of the tallest peaks in the Peruvian Andean range, Huaraz is a hot spot for tourists who enjoy the outdoors. Many trekking and climbing operators use this city as their base

camp for expeditions into the mountains, and the presence of these companies has created opportunities within the tourist sector for restaurants, hotels, hostels, and souvenir shops (see figure 3.5). This economic growth has brought about an increase in the population in Huaraz, which has reached 100,000 inhabitants. This population includes many poor highland farmers who have either migrated to Huaraz in search of work or who regularly travel there to sell their agricultural and woolen products. The economic prosperity in Huaraz has allowed for the development of a service sector capable of supporting a middle-class urban lifestyle. The southeastern sectors of Huaraz, Soledad and Pedregal (see Figure 3.6) are composed of poor *barrios* (neighborhoods) of mostly highland wage laborers and the southwestern sections of the city, Belén and Huarupampa, are inhabited by middle-class neighborhoods where businesses such as restaurants, grocery stores, pharmacies, clinics, and other small shops flourish. Activity in the center of the city revolves around the Plaza de Armas (see figure 3.6), whose main sectors are San Francisco, Soledad, Pedregal and Huarupampa. Banks, a post office and European-influenced tourist establishments are there (Bode 1989). Immigrants from England, Germany and France, who have married local *mestizo* Peruvians, own most of the tourist restaurants and trekking companies. Some maintain hotels and hostels, which are frequented only by outsiders: visitors from Lima or European and North American tourists. Ironically, the capitalistic tourist sector of Huaraz is embedded within the city's poor neighborhoods.

The northwestern section of the city, Centenario (see figure 3.6), is poor, inhabited mostly by highlanders, and the site of one of the largest outdoor markets. Following the earthquake of 1970, most of the three central indoor markets in Huaraz were destroyed. During the rebuilding process, people became accustomed to shopping in the streets of Centenario and as a result, the outdoor street market there continues to thrive to this day, boasting a mix of

mestizo and highland sellers (Babb 1989). Huaraz has two main market days and business traffic trucks from the coast are only present midweek and on weekends. A mix of local *mestizo* and highland Andean vendors sell food and items of daily necessity in the central Huaraz market. *Mestizo* vendors from the coast come to Huaraz to sell fish and coastal fruits. Local *mestizos* and highlanders from Huaraz sell bread, juice, clothing, soap, and shoes. However, the most colorful parts of the market are the highland *campesinos* selling their tubers and other local produce. Typically, the highland vendors are women from hamlets as far away as two hours driving time. Given that the only other large, central market in the region is the one in Carhuaz (which is smaller and occurs only twice per week), Huaraz is the most important selling venue for these vendors.



Figure 3.6: Map of Huaraz (adapted from Bode 1989)

Highland Hamlets of the Callejón de Huaylas Valley

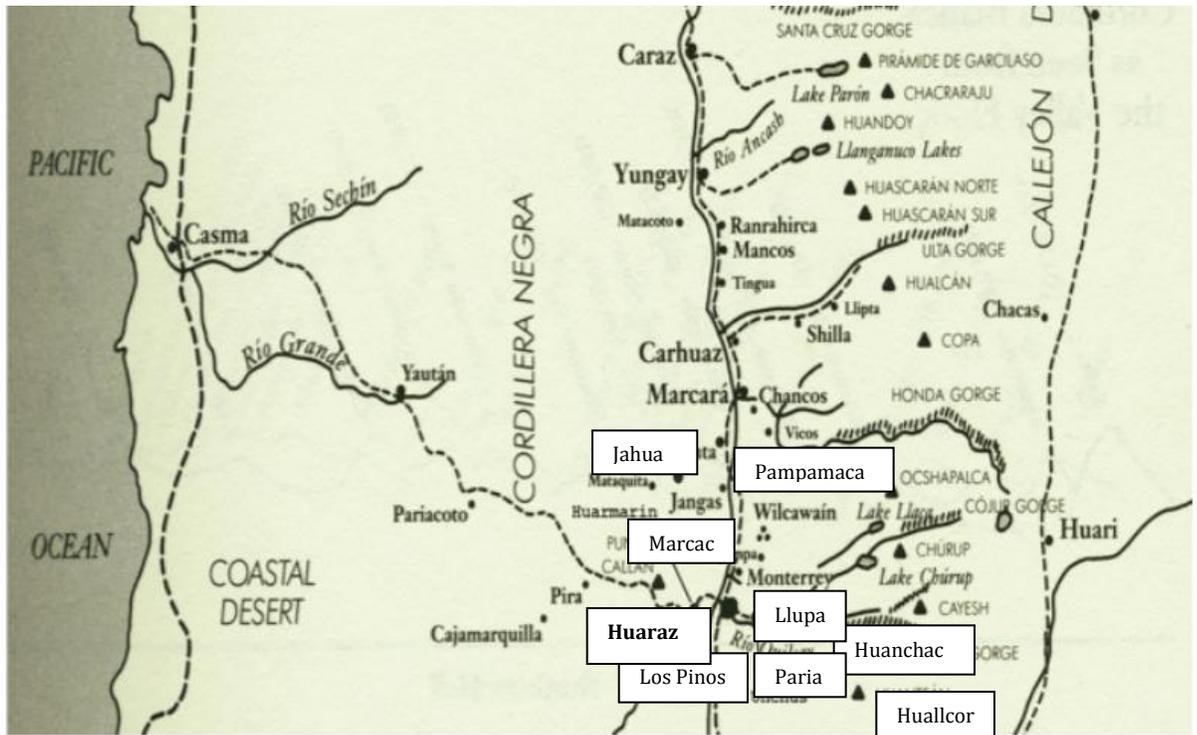


Figure 3.7: Map of Hamlets in the Callejón de Huaylas Valley (adapted from Bode 1989)

The many highland hamlets surrounding the town of Huaraz are within a two-hour driving distance. These hamlets possess several similarities: ethnicity, Quechua and Spanish languages; extensive agriculture on communal land; market participation; small scale animal ownership for traction, work, and consumption purposes; houses made of adobe; the Catholic religion mixed with local belief systems; small in-home stores selling packaged food items and mass-produced ones; and community sizes ranging from 100-300 persons. Some hamlets have access to electricity but that does not necessarily mean that if the hamlet has electricity that every household in the community will have power.

Subsistence practices differ little from hamlet to hamlet. The extensive market-oriented agriculture practiced in the highlands involves basic technology such as wooden plows, traction

animals, burden animals, and metal and wooden tools (Doughty 1968). The same agricultural practices and technologies that were described by ethnographers in the past are still the only type of agricultural technology used in the highlands of the Callejón de Huaylas valley. Highlanders do not own or use tractors or any mechanized agricultural tools. Ownership of animals such as *cuyes* (guinea pigs), bulls, cows, sheep, and donkeys is common, but not all households own animals. The particular crops grown in the region consists of two groups: those agricultural products that are grown in surplus for sale in the market such as *papas* (potatoes), *oca* (small sweet white tubular tuber variety)(see figure 3.8), *olluco* (tuber variety similar in taste to a beet), *camote* (orange sweet tuber variety similar to sweet potato), *trigo* (wheat), *nabo* (large white turnip), *cebolla* (red onion), and *choclo* (large kernel white maize), and ones solely produced for household consumption such as *quinoa* (a small sized protein rich Andean grain), *alberjas* (peas), *cancha* (dried roasted maize), and several varieties of *calabaza* (squash and pumpkin) (Doughty 1968).



Figure 3.8: Various Types of Oca

In the Callejón de Huaylas, meat is not a central component of the diet and only supplements the variety of cereals and tubers that comprise the bulk of the Andean diet. Less wealthy households tend not to have many animals for work or for food; however, in the

Callejón de Huaylas even the poorest families usually have *cuyes*. Additionally, chickens and pigs are often raised for sale at the market or for household consumption.

The farming technology practiced in the region has changed little since the colonial times and relies heavily on animal labor. Bulls are required for their traction and strength and manual plows are used in the fields. The team of yoked bulls used for plowing is called as *yunta* (see figure 3.9).



Figure 3.9: *Yunta* Plowing Field for Planting

Donkeys are needed to transport the agricultural products from the highland fields to the home because they are well adapted to the rough highland terrain. Since there are no llamas in this region of the Andes, the donkey fulfills a crucial role; a single animal can carry up to two sacks or 160 kilograms of tubers (Bourque and Warren 1981).

The most significant change in Callejón de Huaylas agriculture practices has been the introduction of chemical fertilizers since the 60's, which are readily available in Huaraz. In recent years, certain non-native varieties of agricultural seeds and products, such as broccoli, cauliflower, and tomatoes have been introduced to the region, allowing for diversification of the Andean farmers' products. However, since extensive market participation plays a central role in

the economy, most highlanders generally focus only on a few high yield crops such as tubers, maize, and wheat.

Pampamaca (see figure 3.7) is a highland hamlet located one hour and thirty minutes from Huaraz at an altitude of 12,000 feet.



Figure 3.10: Hamlet of Pampamaca

The people living in Pampamaca (see figure 3.10) are highland farmers who grow *papas* and *trigo*. Since they do not grow maize they rely on trade with farmers in Honcopampa, located at a higher elevation, to obtain it. Some of the households in Pampamaca supplement their agricultural income by weaving wool rugs, bags, scarves, gloves, and hats. Weaving has become a successful mode of production in the community and involves several households, each with specialized roles such as owning and tending sheep for wool production, wool dyeing, wool spinning, and loom ownership (see figure 3.11).



Figure 3.11: Wool Dying in Pampamaca

Households in Pampamaca produce additional income from selling small packaged foods and other products from small in-home stores, homemade freezer pops, and small-scale carpentry items such as wooden spoons used for cooking. Many community infrastructural improvements have been completed in this area due to the work of the nongovernmental organization World Vision. Neighbor relationships seem strong with many community members having assisted in completing a health post, building better roads, and installing improved sanitation and water systems.

Jahua (see figure 3.7) is a highland hamlet located 45 minutes northwest of Huaraz at an altitude of 11,000 feet.



Figure 3.12: Jahua

Walking is the most common way to reach Jahua since it is a small community situated on an isolated ridge (see figure 3.12). Market-oriented agriculture is the only form of income practiced by highlanders in Jahua. The main crops grown by the Andeans' for sale at market are *papas oca olluco*, and *trigo*; however, they do grow lemons and peas for household consumption. The families that grow wheat in Jahua use burros to process the wheat by having the burros crush the wheat stalks with their hooves and then separating the wheat from the chaff with pitchforks. Following the processing, the wheat is either ground into flour to sell or boiled and dried to produce *mote de trigo* (a chewy boiled wheat snack). In the hamlet communal work groups consisting of neighbor alliances are commonly seen engaging in water irrigation system maintenance and communal building construction.

Marcac (see figure 3.7) is located in the valley floor between Huaraz and Carhuaz two of the larger valley settlements. Marcac is not at as high of an altitude as other hamlets so maize and *habas* (a large lima bean variety used for making flour) are the main crops grown in the area. Large-scale agriculture seems to be rare in this particular hamlet. Unlike other Andean hamlets where communal reciprocal work exchanges are common in Marcac neighbor relationships seem strained and households seem to depend on only family members. The households are clustered together around a small flat open plaza.

Llupa (see figure 3.7) is a small highland hamlet of 100 highlanders located 45 minutes east of Huaraz at an altitude of 11,500 feet. The area of Llupa is large allowing the households of this hamlet to be spread apart. Market-oriented agriculture is practiced with *papas, oca, olluco*, and *trigo* being the main crops produced for sell in the market in Huaraz. Cabbage is grown in abundance in many nearby fields. Neighbor relationships seem cohesive but communal

work groups are less common. Men migrate to Huaraz to perform wage labor in construction supplement household agricultural income and women are domestic workers in the capital.

Huanchac (see figure 3.7) is a more remote highland hamlet located in mountains above Huaraz. It consists mostly of highland farmers engaged in the cultivation of quinoa and other Andean tubers. Sheep herding is common in this area of the valley. The location of the hamlet higher in the mountains allows for sheep grazing. The population is dispersed as houses are farther apart than in other hamlets. Many members of this community commute to Huaraz to either sell agricultural products in the market or to engage in construction work to supplement their farming incomes. Communal work groups are seen throughout the hamlet performing construction work on buildings. However, neighbor relationships seem to be weaker when compared with other hamlets in the valley.

maize

Paria (see figure 3.7) is an intermediary community along the mountainside between higher remote hamlets and Huaraz. Students from Huaraz come to the area and teach Spanish classes to farmers who want assistance with learning the language or need other types of urban assistance. Sheep herding is also common in this hamlet since the geography consists of steep open mountainsides. Many households in the community raise pigs because they function as a type of savings account for the family. Food scraps will be saved and given to the pigs and when a financial time of need arises then the animal(s) will be sold. Quinoa, *oca*, *olluco*, and *mashua* (yellow pointed tuber variety) are heavily cultivated in the fields near the town plaza. Due to the steep terrain houses are clustered together and are mostly made of adobe (bricks made of a mixture of straw, manure, and dirt). The adobe works well as a building material in the highlands because homes are kept relatively cool during the day and warm at night due to the

isolative properties of the material. Neighbor relations are important in the area with reciprocal agricultural work being common.

Los Pinos (see figure 3.7) is small hamlet located close to Huaraz. Many community members have stores in their homes selling small grocery and household items. The hamlet is an area that gets a lot of commuter traffic so the stores are set up to provide food and products to highlanders returning from or heading to Huaraz. Different varieties of maize are grown in the area surrounding the hamlet. Neighbor relationships seem strained and many community members were forced to be self-reliant.

Huallcor (see figure 3.7) is the most remote highland hamlet included in this research. It is one-and-a-half hours southeast of Huaraz. Spanish was the minority language in this area with Quechua being commonly spoken. Quinoa, *chocho* (a type of small legume eaten cold as a part of a salad), *oca*, *mashua*, and *olluco* were commonly cultivated. Neighbor relationships seem strong with water work groups being observed building irrigation ditches and repairing water lines. The houses are adobe and organized around a small plaza that houses the church and school. Stables and living space are organized in close proximity due to the extreme steepness of the mountainside in this area.

Chapter 4: Research Design and Methods

Cultural Domain Analysis

The research methods of cultural domain analysis are an important initial step in the investigation of the impact of culture on individual biopsychosocial processes.

Culture and its influence on the mind and body is a central topic of interest in medical anthropology and the aim of this research is examine the impact of social role stress on an individual's susceptibility to developing the cultural syndrome of *susto*. Using various research scales, hypotheses focusing on cultural consonance and historical trauma were explored in relation to *susto*. To that end, it was hypothesized that:

1. Andeans with lower cultural consonance:
 - a. would score higher on the Susto Symptoms Scale, having experienced more *susto* symptoms.
 - b. would have a lower score on the General Health Questionnaire.
 - c. would score higher on the Cohen's Perceived Stress Scale.
2. Individuals with higher scores on the Historical Trauma Scale:
 - a. would have higher scores on the Susto Symptoms Scale
 - b. would have higher scores on the Cohen's Perceived Stress Scale
 - c. would have higher scores on the General Health Questionnaire

Addressing these various hypotheses will help to understand the relationship between *susto* and social stress.

In order to identify what Andean highlanders regard as stressful there has to be an understanding of the different aspects of life that are being shaped by culture. One way is to define these as domains or areas of agreement about particular elements of the cultural model of highland life within Andean society, such as characteristics associated with a good man or woman or symptoms of *susto*. Analyzing cultural domains can help anthropologists begin to unpack the components of meaning that informants use to cognitively evaluate their society. Social roles, *susto* symptoms, highland farming requirements associated with social roles, and historical events were the cultural domains of interest for this research project.

Cultural domain analysis is a set of techniques for eliciting terms from informants for a specific domain and for eliciting the major dimensions of meaning from that domain. To effectively conduct research using cultural domain analysis, a three-staged process of tasks consisting of free listing, unconstrained pile sorting, and ranking was employed. These techniques helped explore what the social roles of importance are in the Callejón de Huaylas, and explore and identify the possible historical stressors that might be impacting informants in the valley. Participant observation supplemented cultural domain analysis in the nine research hamlets in the valley to gain additional knowledge of possible social role expectations and potential social stressors experienced by highlanders. The cultural domain analysis technique was selected to avoid being invasive when asking about sensitive subjects, such as the period of the Shining Path. Utilizing this technique enabled the researchers to ask informants about generalized subjects and not about specific topics in their own lives. Informants initially free listed items for a specific domain and then performed unconstrained and constrained pile sorts of the free list items.

The purpose of the free listing of terms by informants was to illicit what comprises the elements of their cultural model of the domain. The unconstrained pile sort of the free list terms involved the informant sorting the free list terms into as many piles as they deemed appropriate; the purpose of this task was to elicit the features or dimensions of meaning that individuals use to distinguish among the terms. The constrained pile sort of the free list terms required the informant to order the free list terms into a specific number of piles based on a specific criteria implemented by the researcher based on local cultural knowledge of the cultural model of the given domain which was gained from key informants and focus groups. The purpose of the constrained pile sort was to assess the level of knowledge an informant possessed for a particular cultural domain. This series of tasks first extracted important components of the gendered social role expectations (based on domains utilized by Rubel et al. (1984) to study *susto* in Mexico) and then utilized these elements to more fully develop the measure of Cultural Consonance in Social Role Expectations Scale, CCSRES. These same methods of cultural domain analysis were used to compile a list of all possible *susto* symptoms as well as a series of historical events that were traumatic to members of the Andean community of the Callejón de Huaylas.

Sampling

For the cultural domain analysis in phase one of the project, a total of 90 different informants participated in the three-stage process. A sample of 30 informants from the nine hamlets participated in the 30-minute free listing exercise. Then thirty additional informants from the same nine hamlets were selected to perform the 30-minute unconstrained pile sorting exercises, and then lastly 30 different informants from the same nine hamlets performed the ranking exercises. These three sample sets of 30 separate informant samples were used to

ultimately comprise the Cultural Consonance in Social Role Expectations, the *Susto* Symptom Scale, and the Historical Trauma Questionnaire that was used later in phase four data collection.

Phase one: Free listing

During phase one, focus groups were conducted in nine hamlets to gain additional clarification of the culturally salient meanings of certain social stressors identified from the cultural domain analysis. Informant interviews were completed with highlanders describing terms they would associate with a good and bad man, a good and bad woman, a good and bad neighbor, the symptoms of *susto*, highland farming requirements, and historical events in the valley. All informant interviews were conducted in Spanish by the researcher and his research assistants. Each interview was recorded using an electronic digital recorder and then transcribed and translated to be used in later data analysis.

Free listing is a process of eliciting terms that are cognitively associated with a particular cultural domain. For example, an informant was asked “What are the characteristics of a good man?” or “What are the characteristics of a bad farmer?” Then the informant listed words he or she would use to describe a person in the highland hamlet who he or she would consider a good man or a bad farmer. The domain of social roles was further divided into characteristics of a good or bad man, good or bad woman, good or bad farmer, good or bad father, and good or bad mother. The domain of historical events was further divided into traumatic, important, and dangerous events. Researchers also noted any interesting comments made by informants.

Free lists provide a “thorough” list of terms and then “all” of those terms are studied to determine what the terms mean. Quotation marks are used because, typically, “all” or “thorough” refers to the terms used by “majority” of people. With exceptions regarding farm tools and historical events the lists obtained here were long. This is a result of the large number

of synonyms that are used in complex domains like the social roles and susto symptoms. For example, for the domain of social roles both inviting neighbors to dinner and having a meal with neighbors (“*invitar la comida a los vecinos*” “*comer con los vecinos*”) were labeled as “invites neighbors to eat” because both these terms were similar in their subject matter. After many lengthy discussions of the free lists with my research assistant about whether lumping of terms was appropriate under certain conditions we chose to include as much detail as possible. Narrowing down the list was possible through sampling items representing all the variation in meanings in the list. It was important for the research to have a sampling of most common and infrequent terms to generate greater contrast in the lists. I also was striving to have terms that help to identify the way one’s life does or does not match a particular cultural model.

Phase 2: Unconstrained Pile sorts

For the unconstrained pile sort exercise, informants are presented with a set of cards for each domain under study and are instructed to sort the cards into as many piles as they think is necessary sorting terms that are more closely related into the same piles (see figure 4.1). Additionally, informants are instructed that there is no correct sequence that the cards should be placed in, and they are told that placement is solely based on their opinion. To create the cards for the task, files were created using Microsoft Word with a term or phrase typed in 18-point font and then printed out and cut apart to be attached to a 3 x 5 index card. The result was a set of cards with easily readable terms or pictures with Spanish special characters used when necessary.



Figure 4.1: Informants Pile Sorting in Paria

In some instances pictures were used in place of terms for particular domains such as farm tools where informants who were mostly farmers responded well to these familiar cultural images.

The unconstrained pile sort is an excellent way to obtain a general understanding of the meaning of an extensive list of many different terms. The task requires literate respondents; however, many Peruvians are not literate. To address this concern, my research assistants and I made several provisions including using pictures along with words when possible, and reading aloud words in some cases. However, many respondents who could not read well were still able to recognize the words and phrases on the cards, which was sufficient for our purposes since this activity does not require reading comprehension.

The first pile sort consisted of farm tools. It was good to start with this domain since most informants were farmers and would enjoy sorting tools and seeds that were culturally salient items in their lives. It was essential for informants to become comfortable with performing tasks that were unfamiliar. Following the farm tool domain informants were asked to perform unconstrained pile sorts on historical events, *susto* symptoms, and lastly social roles. The social roles domain contained the most cards; consequently I deemed it the most complex, so it was always the last set to be sorted by informants.

After sorting, a full square similarity matrix of terms was calculated for each respondent. Consisting of each term and how it relates to every other term. When two terms appear in the same pile, there is a “1” in that cell of the matrix, identifying similarity. When two terms are not in the same pile, there is a “0” in that cell of the matrix, identifying that those terms are not similar. Each of the matrices can then be averaged resulting in the percentage of times each term appears with each other term.

The aggregate similarity matrix was analyzed using nonmetric multidimensional scaling (MDS) to decrease the aggregate matrix to a 2-dimensional map of the distances between terms. Terms that are more closely related in meaning appear closer together while terms that are farther apart are less similar in meaning. The “stress” value in MDS indicates how closely related the 2-dimensional array of terms is related to the original set of similarities. An acceptable stress level is less than .2. The greater the stress value, the lower the congruent relationship between the original and the 2- dimensional distances.

Phase 3: Constrained Pile Sorts and Ranking Tasks

In the next phase of the research, 30 respondents were interviewed. This phase was designed to better understand the dimensions of meaning in the domains of farm tools, *susto* symptoms and social roles.

For farm tools, it appeared that the only significant dimension of meaning was how farming elements are used together. Respondents were asked to rank the items in terms of the importance of the item “for a farmer to have.” In order to do so, respondents were asked first to sort the items into three groups: one group of items used for preparing land, one group of seeds, and one group of items associated with the harvest. To achieve a complete ordering of the terms, following the pile sort and within each group items were ranked individually from most-to-least

important.

Having the rank-order data enabled the use of the cultural consensus model to determine if there was enough similarity in the rankings in the group to conclude that all of the respondents were using a single cultural model (Romney, Weller and Batchelder 1988). This data also permitted me to calculate the representation of the group as a whole, which then could be used to predict placement of items on the MDS from the unconstrained pile sort.

Some of the rankings of farm tools and social roles reached consensus in the analysis, which justified calculating a composite ranking. This analysis simply involved using the rankings as a dependent variable in a regression analysis, with the MDS coordinates from the pile sort as independent variables. This process can be used to determine if the distances in meaning between terms from the MDS order the terms in a similar manner as the ranking. If there is a high multiple correlation coefficient, then the comparisons of meaning among the terms is explained by the ranking of those terms along the dimension used in the research.

It is important to readdress the purpose of this work. One purpose is to use information gathered from the free listing, pile sorting, and ranking to generate a survey interview schedule to measure individual behaviors and beliefs in the domains of historical events, farm tools, social roles, and *susto* symptoms. The ultimate aim of this process is to calculate cultural consonance in each domain for individuals and to use cultural consonance as a predictor of health status (Dressler 2001).

The concept of cultural consonance does not require that there be a single, uncontested cultural model for a particular domain; however, the calculation of cultural consonance is much easier if there is only one model. If there is a domain in which models are not fully agreed upon, the calculation of cultural consonance with different models is possible. In general, it requires a

sufficient sample size to detect consensus where it exists and to identify the intracultural diversity (Dressler 2001). An interview then has to be developed to test for cultural consonance in the different domains of study.

Constructing a Survey Interview Schedule

The final phase of research for the initial segment was the development of the interview schedule to be used in the epidemiologic case-control study. One of the main goals of this research is to understand the degree to which individuals *in their own behaviors* approximate shared cultural models in these domains of everyday life, also called cultural consonance (Dressler 2001). I hypothesized that the higher the degree of cultural consonance in each domain in the study, the better the health will be of the individual. In prior research by Dressler and colleagues (1996, 2000), cultural consonance was measured in the domains of social support and lifestyle. They used the generated answer keys from the cultural consensus analysis to determine which of the items were the most important.

In my study, the same strategy can be employed with respect to highland farming requirements, historical events, *susto* symptoms, and social roles. The systematic data-collection techniques of free listing and pile sorting identified culturally important items for each domain. Subsequently, the ranking exercises indicated the best estimate of these evaluations. In the survey component of the research, I collected self-reports of experiences of *susto* symptoms, historical events, and ownership of tools.

The other domain, social roles, was more challenging to understand its relationship with the answer key. For example, an individual can report without much difficulty if he or she owns a *yunta* or if he or she has experienced a headache. For social roles, the cultural answer key from consensus analysis provides us with a ranking of the importance of these characteristics in being

a good Andean.

The purpose here is to measure the association of cultural stresses also referred to as social stresses with individual physiological processes. This approach is based on the interpretation of culture as a way to understand the relationship between individual behavior and aggregate cultural models.

Phase 4: Epidemiological Case-Control Methods

A case-control sampling strategy from epidemiology was utilized to generate a sample of 102 informants in the Peruvian Callejón de Huaylas. The efficiency of the case control sampling strategy allowed 51 *susto* sufferers and 51 non-*susto* or comparable control informants to be interviewed to create the total sample of 102 (Bernard 2002). The case control data collection was a part of phase 4 of the project and took 6 weeks to complete. The research instruments used during this phase of data collection were developed from the cultural domain analysis conducted during the earlier phases of the research.

Key Informants

Don Marco (a pseudonym was used to protect confidentiality), a traditional healer (*curandero*) with a clinic in the city of Huaraz, Peru was the primary key informant for the research. After being introduced to him in 2000 during a pilot study on traditional healers in rural Peru I developed an important relationship. Don Marco accompanied me on many of the informant interviews and was an integral part of the process through all four phases of the research. He is extremely skilled in anthropological work, having been my research assistant in an earlier project studying *chucaque* in 2006. He is well versed in working with highland Andean farmers because he is fluent in both Spanish and Quechua in addition to being a *curandero* with a respected position within highland society.

Susto Cases

Fifty-two *susto* sufferers were visited and interviewed by myself with the assistance of a trained and qualified Spanish interpreter, Shelly Hines-Brooks. Each interview was recorded on a digital recorder and subsequently transcribed and translated by the interpreter from Spanish into English using Digital Voice Editor 2 digital recorder computer software. The *susto* sufferers for phase four were located in 11 highland hamlets throughout the Callejón de Huaylas Valley.

Control Non-*susto* Sufferers

The control sample of 51 non-*susto* sufferers was generated from the same hamlets where the *susto* cases were found. The control sample consisted of 51 participants that had not suffered from *susto*. Each interview was recorded on a digital voice recorder and transcribed and translated by the interpreter from Spanish into English using Digital Voice Editor 2 digital voice recorder computer software.

Approval and Consent

Participants were provided with and asked to sign a written informed consent form (see appendix E) approved by the University of Alabama's Institutional Review Board. The form indicated that the study concerned *susto*, that individuals were not required to participate, and that if they did participate they could withdraw from the study at anytime without penalty.

Interview Schedule:

Cultural Consonance in Social Role Expectations Scale

The purpose of this research instrument was to enable an investigator to gather data on self-perceived role adequacy and translate the data into numerical scores representing social stress. The instrument was inspired by Rubel and associates' observations that there were

discrepancies between an individual's expected social role and his or her ability to fulfill that social role, the result being a stressful experience for those individuals (O'Neil and Rubel 1980).

How can one assess the relationships between the individuals and cultural consensus models for social roles? As noted by Dressler (2001), it would be possible to ask about individual behaviors, but in the case of social roles that could be problematic because one could be asking questions on the lines of "How often do you beat your wife?" or "Do you fight with your neighbors?" It certainly seems less plausible that these would result in valid measures of behavior. Modeled after Dressler's (2001) approach to deal with these challenges for domain of social roles or "being Andean" I chose to ask about how the respondent feels they adequately address a characteristic in his or her own life. To develop the individual-level items to include in the epidemiological survey, I took the items, or weighted words from the consensus analysis for each domain. In addition to the scales to be used to measure cultural consonance in several domains, I included scales of: general health and well-being, and perceived stress.

The Cultural Consonance in Social Role Expectations Scale (CCSRES) (see appendix D) is comprised of 15 variables that have been modified to appropriately test for social stress among *susto* and non-*susto* participants in the Callejón de Huaylas of Peru. The CCSRES measured culturally agreed upon social role expectations. The social role interview was separated into two segments. Males and females were asked all 15 questions for the CCSRES. Part one consisted of yes or no questions while part two was comprised of statements in which informants were asked to use a four-point Likert scale to assess the level of agreement they felt represented their own life.

In part one of the Cultural Consonance in Social Role Expectations Scale, informants were asked about the subjects of cooking, washing, and planting crops (see table 4.1). These

three activities are of tremendous importance to the Andean household and are tasks that are most frequently assigned to adult social roles. These questions are measures of cultural consonance because a “good” Andean spouse will cook and wash clothing. A “good” Andean farmer will always plant crops. Being unable to enact these agreed upon cultural models can create a source of social stress.

Table 4.1: Social Role Interview Questions #1-#3

| Social Role Questions | Yes | No |
|------------------------------------|-----|----|
| 1. Do you cook every day? | | |
| 2. Do you wash clothes every week? | | |
| 3. Do you plant crops every year? | | |

In part two, informants were given a 4-point Likert response scale and asked to disagree or agree to each of the statements about being Andean (see table 4.2). One statement in this section of the interview is “My home is always well supported.” The statement deals with the issue of spousal household support. Agreeing with the statement by indicating that the household always has support is the consonant response. The phrase “It is important that people think of me as a respectful person” inquires about how the individual is regarded by other neighbors. The consonant response would be to agree with the statement by indicating that neighbors do have respect for the individual. “Sometimes my neighbors let me plant on their land” is a statement addressing specific types of close reciprocal neighbor relationships. These types of relationships are culturally important in the Andes; however, they are becoming less common than they would have been in the past. The consonant response is to agree with the statement indicating that they have been able to maintain strong neighbor relationships. These

statements allow for different elements of the Andean cultural model of a “good” Andean to be studied among those who have had *susto* as well as those who have not.

Nine of the statements had to be reverse coded so that the consonant response would be elicited from the informant. For example, as with the statement “I sometimes do not work very hard”, if an individual feels they work hard then they are consonant and would disagree with the statement. If they do not work hard then they would agree with the statement. This technique is useful because if one were to be asked, “Do you work hard?”, he or she most often would answer yes regardless of whether that was a true statement. Being hardworking is core Andean cultural value, so if one does not work hard then he or she will not be fulfilling his social role.

Spousal relationships are another principal component of Andean households (see table 4.2). The statement, “I find it difficult to take care of my husband/wife” addresses household support. Spousal support is so crucial in the Andes that often times a married couple will be referred to as being like a *yunta*. If one feels that it is difficult to take care of the spouse, then he or she would agree with the statement. On the contrary, feeling that it is an easy task would lead an individual to disagree with the statement. The consonant response to the statement would be to disagree with the statement given that taking care of one’s spouse is very important but often times challenging to enact in one’s own life. Spousal abuse is a theme that Andeans discussed in interviews in earlier phases of the research. The statement “Sometimes my wife/husband hits me.” tries to assess individual family dynamics. The consonant response would be to disagree with the statement, recognizing that one should not hit his or her spouse and instead should have a good working relationship with his or her partner. Asking about spousal abuse is important when trying to measure areas of social stress in Andean life.

Crucial in Andean households is the well-being of children (see table 4.2). The statement “Educating my children is difficult” focuses on the importance of providing education for Andean children. Highland farmers recognize the importance of education for younger generations but also realize that providing that education is sometimes a sacrifice for the parent and the entire household. The consonant response would be to disagree with this statement by indicating that they can provide an adequate education for their children. Child well-being was also measured through the phrase “My children are sometimes not well cared for.” In this instance, the consonant response would be to disagree with the statement since caring for children is an important part of being a “good” Andean. Furthermore, “Sometimes I do not have enough work to support my children well” is a phrase designed to elicit one’s ability to provide for the needs of their children by working. Working is a fundamental component of being a good Andean and being able to work to provide resources such as clothing and school supplies is important. The consonant response would be to disagree with the statement since providing for the needs of children is part of the cultural model of being a good Andean. Food is another necessity for children; the statement “It is difficult to feed my children” addresses the issue of childhood malnutrition. As a result, the consonant response is to disagree with the statement since a good parent should be able to provide adequate nutrition for a child.

Another aspect crucial for the success of the Andean household is the maintenance of strong neighbor relationships (see table 4.2). The Cultural Consonance in Social Role Expectations Scale also concentrates on neighbor relations and attempts to assess one’s level of cooperation with neighbors. “I cannot share my harvest with my neighbors” focuses on the reciprocal relationship where harvests are not just sold at the market but are shared with other neighbors. Since many Andean crops are different types of tubers, the planting and harvesting of

these crops requires a large work force; often neighbors will help one another in their agricultural fields. One way to pay the social debt incurred by receiving assistance with planting and harvesting is to give part of the harvest to those who helped. The consonant response to the statement is to disagree since to enact the cultural model in ones daily life one must have a harvest and be able to share it. Besides sharing one’s harvest another way to maintain good neighbor relations is to invite neighbors to share a meal. The statement, “My neighbors do not have lunch with my family often” establishes the strength of one’s neighbor relations. The consonant response is disagreeing with the statement since inviting neighbors to share a meal with your family is a culturally salient part of the Andean cultural model.

Table 4.2: Social Roles Expectations Interview Questions

| Social Role Questions | disagree completely | disagree | agree | agree completely |
|--|---------------------|----------|-------|------------------|
| 4. I sometimes do not work very hard. | | | | |
| 5. I find it difficult to take care of my husband/wife. | | | | |
| 6. Educating my children is difficult. | | | | |
| 7. Sometimes my home is not supported as well as I would like. | | | | |
| 8. Sometimes my wife/husband hits me. | | | | |
| 9. My children are sometimes not well cared for. | | | | |
| 10. I cannot share my harvest with my neighbors. | | | | |
| 11. It is difficult to feed my children. | | | | |
| 12. My neighbors do not have lunch with my family often. | | | | |
| 13. It is important that people think of me as a respectful person. | | | | |
| 14. Sometimes my neighbors let me plant on their land. | | | | |
| 15. Sometimes I do not have enough work to support my children well. | | | | |

The Cultural Consonance in Social Role Expectations enabled individual levels of cultural consonance to be measured by assigning numerical values to the answer choice in the scale. Many of the statements had to be reverse coded because the consonant response was the opposite of the written statement. For example, if a highlander agrees with the statement that they never eat with their neighbor then they are not consonant. The consonant response is to disagree with statement indicating that they do eat with their neighbor. In part one, the yes and no responses were assigned zero and one respectively. Since there were three questions, the maximum score one could obtain in part one was three. In part two, the Likert scale options of disagree completely, disagree, agree, and agree completely were assigned the numerical values of zero, one, two, and three respectively. The total score one could receive on the scale was 39. The score one needed to have to indicate the highest level of cultural consonance was 39, which would have been comprised of scoring three's on the statements from part two in addition to the one's on the three statements from part one. Even though perfect cultural consonance is not likely to be achieved total scores close to 39 indicate individuals with high levels of cultural consonance.

Susto Symptoms Scale

The *Susto* Symptoms Scale interview schedule (see appendix D) is comprised of variables for each *susto* symptom to be used for measuring physical well-being among *susto* and non-*susto* participants in Peruvian Callejón de Huaylas. Modeled after Dressler's (2001) approach, I chose for the domain of *susto* to ask if the respondent experienced these symptoms. To develop the individual-level items to include in the epidemiological survey, I took the items, or weighted words, from the consensus analysis for the domain of *susto*. In order to measure physical well-being, the informants were asked if they had suffered from the following

symptoms in the past five years. To that end, the symptoms can be organized as symptoms of general sickness and culturally salient classic *susto* symptoms.

Physical Symptoms: General Sickness Symptoms

Informants identified 14 symptoms (see table 4.3) that have the common theme of being an event one could experience when suffering from many different illnesses. Vomiting, fever, body aches, head pain and heart pain are all physical states of the body. No appetite, lacking energy, feeling sick, having bad dreams, and not being able to sleep are all feelings one can experience through a degradation of their physical well-being. Crying, feeling frightened, worrying, and being depressed are mental states that one can suffer from through the process of physical fatigue. These symptoms clearly demonstrate that *susto* does have a dramatic impact on the physical well-being of individuals that are afflicted by the illness.

Cultural Symptoms: Classic *susto* symptoms

The classic *susto* symptoms seem to be particularly relevant in the Andean cultural context (see table 4.3). Feeling dried up is described by informants as a state of being in which one senses that the blood and other bodily fluids are being removed from the body comparable to an extreme state of dehydration. The symptom of jumping in bed during the night is a common feeling associated with *susto*. Afflicted individuals have body spasms which cause difficulty sleeping. Additionally, thinking about being cured indicates a desire to have some relief from the altered state being caused by illness. An individual desires to find a cure for the illness he or she is experiencing. The spirit is important in Andean cultural beliefs, and one's spirit can become dislodged from the body due to certain types of illnesses. Sufferers often feel that their spirit leaves them. The loss of the spirit is what leads to sickness, and individuals cannot get better until they are reunited with their spirit. Heat in the stomach is a feeling one gets when

suffering from *susto* that involves intense pain and discomfort in abdomen and stomach areas of the body.

Altered states of consciousness are commonly associated with cultural syndromes. For example, Brooks (2007) noted that altered states of consciousness are common with individuals who suffer from *chucaque*. Feeling as if falling to the ground is a description of an altered state of consciousness in which one feels dizzy. Afflicted individuals have a lack of balance and are no longer able to perceive the world in a normal state of being. Feeling absorbed by the earth is another altered state of consciousness in which individuals feel that they are being sucked into the earth when they are walking around. It was described as similar to how one feels in a state of inebriation. When an individual is sick he or she feels bored or disinterested in normal tasks associated with daily life. These symptoms demonstrate the complex relationships between physical and mental well-being that are a part of the Andean cultural perception of illness.

The *Susto* Symptom Scale is designed to measure individual levels of physical well-being by assigning numerical values to the answer choices in the scale. The yes and no responses were assigned 1 and 0 respectively. The maximum score one could receive is 22, meaning they have experienced all 22 of the culturally salient symptoms associated with *susto* in the Andes.

For the domain of *susto* symptoms, I asked if the informant had experienced each symptom in the last 5 years. To develop the individual-level items to include in the epidemiological survey, I utilized the weighted words from the consensus analysis for each domain. The following are the items chosen to measure *susto* symptoms (see table 4.3).

Table 4.3: *Susto* Symptoms Scale

In the past five years have you had any of these symptoms?

| <i>Susto</i> Symptoms | Yes | No |
|---|------------|-----------|
| 1. vomiting | | |
| 2. heat in the stomach | | |
| 3. fever | | |
| 4. loss of appetite | | |
| 5. lacking energy | | |
| 6. bodyaches | | |
| 7. bored | | |
| 8. sick | | |
| 9. dry up | | |
| 10. feel like the earths absorbs you | | |
| 11. jumping in bed during the night | | |
| 12. having bad dreams | | |
| 13. not being able to sleep | | |
| 14. head pain | | |
| 15. heart pain | | |
| 16. crying | | |
| 17. worrying | | |
| 18. thinking about being cured | | |
| 19. your spirit leaves you | | |
| 20. feeling as if falling to the ground | | |

| | | |
|------------------------|--|--|
| 21. feeling frightened | | |
| 22. depressed | | |

The complete interview schedule is reproduced in the appendix D.

The *Susto* Symptoms Scale was comprised of 22 commonly named symptoms of *susto* that were gathered from phase one, two, and three interviews. The purpose of using this specific research instrument was to gather data on *susto* symptoms and translate the data into numerical scores representing physical well-being. In addition to the *susto* scale, I created a scale to look at historical trauma.

Historical Trauma Questionnaire

The Historical Trauma Questionnaire is comprised of five historically significant events that were regarded by Andeans living in the Callejón de Huaylas Valley as being particularly traumatic (see appendix D). The events were gathered from phase one, two, and three interviews. The purpose of this particular research instrument is to enable an investigator to gather data on historical trauma and translate the data into numerical scores representing historical stress levels.

The Historical Trauma Questionnaire (see table 4.4) is comprised of variables for events that were regarded as traumatic among *susto* and non-*susto* participants in the Peruvians Callejón de Huaylas. Modeled after Dressler's (2001) approach, I chose for the domain of historical trauma to ask about the degree to which the respondent had experienced the event. To develop the individual-level items for inclusion in the epidemiological survey, I took the items, or weighted words, from the consensus analysis for the domain of historical trauma. The following

are the items chosen to measure historical stress; accordingly, informants were asked to rate whether an event impacted their life a lot, a little, or not at all.

The significant historical events in the valley are associated with the themes of natural events, sickness, and terrorism. Without a doubt, the most catastrophic events to occur in the valley were the earthquake and avalanche of 1970. This series of events killed many Andeans, destroyed entire towns, and ruined cropland, and is considered one of the greatest natural disasters in the Western Hemisphere (Oliver-Smith 1986). Most Andeans in the valley recall where they were the day of the earthquake. Another disaster occurred in 1988 when a flood, caused by the gold mine located above the hamlet of Jahua, created a tremendous amount of damage destroying homes and agricultural crops. The impact was the most significant in the area immediately surrounding Jahua, but the waters also destroyed crops in other areas of the valley. Agricultural production is a difficult occupation, and many Andean farmers were devastated once again by the late crop freezes of 2008. They described the crops seeming as if someone had burned the leaves of the plants and charred the agricultural landscape.

There were significant events in the valley that were not caused by nature but by human society. The 1980s saw dramatic political unrest in Peru with the Shining Path political movement. While the uprising did not begin in this Andean valley, it quickly spread throughout many parts of Peru. In the Callejón de Huaylas, the Shining Path kidnapped and assassinated local political authorities. Electricity was disconnected, homes were blown up and the terrorist group enforced curfews in numerous hamlets. Animals and crops were taken from the farmers and men were forced to join the movement. Chaos engulfed much of the valley, and some farmers pretended to be associated with the Shining Path in order to extort money from other farmers in the valley.

Another event related to human society was the cholera epidemic of 1990. Much of the Peruvian population was impacted as a result of the consumption of raw seafood infected with the *cholera Vibrio* (Joralemon 2006). *Ceviche*, is a common Peruvian dish, consisting of various types of raw seafood marinated in limejuice. The cultural practice of eating this dish contributed to the widespread cholera outbreak in the Callejón de Huaylas. Of course there were countless other events throughout the history of the valley, but these five represent what the collective group of Andeans farmers discussed as having the greatest impact.

Historical Trauma Scale

For the domain of historical trauma, I asked informants about the impact of certain historical events on their life. To develop the individual-level items to include in the epidemiological survey, I took the weighted words from the consensus analysis for each domain. The following are the items chosen to measure the impact of historical events (see table 4.4).

Table 4.4: Historical Trauma Questionnaire

| Historical Trauma Questions | not at all | a little | a lot |
|--|------------|----------|-------|
| 1. Were you impacted by the 1988 flood that was caused by the gold mine? | | | |
| 2. Were you impacted by earthquake of 1970? | | | |
| 3. Were you impacted by the crop freeze of 2008? | | | |
| 4. Were you impacted by the cholera epidemic of 1990? | | | |
| 5. Were you impacted when the terrorists went around killing authorities, bombed houses, and knocked down the electrical towers? | | | |

The complete interview schedule is reproduced in the appendix D. In addition to the historical

trauma scale other scales were used to measure physical and mental well-being.

The Historical Trauma Questionnaire is designed to measure individual levels of historical stress by assigning numerical values to the answer choices in the scale. The responses not at all, a little, and a lot were assigned zero, one, and two respectively. The maximum score one could receive is ten, meaning they were impacted significantly by all five culturally agreed upon historically significant events in the Andes.

Cohen's Perceived Stress Scale

Cohen's Perceived Stress Scale is comprised of 15 statements (see appendix D) designed to assess one's mental well-being. The purpose of the research instrument is to enable an investigator to gather data on mental well-being and translate the data into a numerical score representing a level of mental well-being.

Cohen's Perceived Stress Scale is comprised of variables for events that were regarded as traumatic among *susto* and non-*susto* participants in the Callejón de Huaylas of Peru. The following are the items chosen to measure mental well-being in which informants were asked to rate an event's impact on their life as never, almost never, once in a while, frequently, and almost always.

The statements about mental well-being in the valley are associated with the themes of physical well-being such as difficulty sleeping and feeling tense. Situational anxiety, loss of control in life, and conflict resolution are issues addressed through self-assessment of locus of control in life. Informants were asked, "In the last month, have you felt incapable of controlling important events in your life?" and were expected to respond by choosing never, almost never, once in awhile, frequently, or almost always. Generating a measure of one's self-assessment of resolving issues in life is assessed by asking about the themes of dealing with change,

management of personal problems, time management, and ability to deal with problems. Some of the statements had to be reverse coded because the consonant response was the opposite of the written statement. For example, if a highlander were unable to resolve all the situations they had to face in the last month than they are not consonant. The consonant response is to disagree with statement indicating that they were able to resolve all situations they faced. Andeans were asked, “In the last month, have you felt upset by the situations that were out of your control?” again using the 5-point rating scale. Responses were assigned score of zero, one, two, three, and four respectively. The maximum score one could receive is 60. The score one would need to have to indicate the highest mental well-being would be 60, which would be comprised of fours on the statements. Perfect mental well-being is not likely but total scores close to 60 indicate individuals with low levels of mental stress and high levels of mental well-being.

General Health Questionnaire

The General Health Questionnaire (GHQ) is comprised of 12 statements designed to assess one’s emotional well-being. The purpose of this research instrument is to enable an investigator to gather data regarding physical and emotional well-being, which can be translated into numerical scores representing a measure of emotional wellness.

The General Health Questionnaire measures depression, anxiety, social impairments, and hypochondriasis; furthermore, it has been shown by Pedersen et al. (2008) to effectively assess Andean mental health outcomes when the cut-off point for obtaining a positive screening result is lowered to two. The GHQ uses a response scale of much less than usual, same as usual, more than usual, and much more than usual and asks questions such as “Have you been able to concentrate on whatever you are doing?”, “Have you been feeling unhappy and depressed?”, and “Have you been thinking of yourself as a worthless person?”. The GHQ was selected to add to

the research design a measure of assessment of individual level of social well-being specifically in regards to one's emotional health.

The responses are assigned zero, one, two, and three respectively. Many of the statements had to be reverse coded because the consonance response was the opposite of the written statement. For example, if a highlander says that they have recently felt constantly under strain than they are not consonant. The consonant response is to disagree with statement indicating that they have not felt under strain. The maximum score one could receive is 36. The score one would need to have to indicate the highest level of emotional well-being would be 36, which would be comprised of three's on the statements. Perfect emotional well-being is not likely but total scores close to 18 indicate individuals with low levels of physical and emotional stress and high levels of emotional well-being.

Methods of Analysis

The case control data were analyzed using SPSS 18.0 statistical software. The data were analyzed in three parts: part one, internal consistency testing and descriptive statistics; part two, bivariate association testing using t-test and correlations; and part three, multivariate modeling with regression analysis including logistic regression and multiple regression. Internal consistency reliability analyses were calculated on Cultural Consonance in Social Roles Expectations Scale, Historical Trauma Scale, *Susto* Symptoms Scale, Cohen's Perceived Stress Scale, and General Health Questionnaire. Descriptive statistics were assessed on the covariates of age, sex, and education. Additionally, the descriptive statistics were also determined on the independent variables of cultural consonance and historical trauma as well as the dependent variables of *Susto* Symptoms Scale, Perceived Stress Scale, and General Health Questionnaire.

Bivariate association t-tests were carried out on *susto* status and the *Susto* Symptoms Scale, Perceived Stress Scale, and General Health Questionnaire. T-tests were also performed on *susto* status and the covariates of age, education, and sex. *Susto* status and the independent variables of Cultural Consonance and historical trauma were tested using t-tests. In addition, to t-tests, correlation matrices were generated for the *Susto* Symptoms Scale, Perceived Stress Scale, General Health Questionnaire, cultural consonance, and historical trauma.

The second part of the data analysis relies on multivariate modeling. Logistic regression was employed to test the association of *susto* status with age, sex, education, cultural consonance, and historical trauma. Multiple regression analysis was conducted to examine the association of the *Susto* Symptoms Scale with age, sex, education, cultural consonance, historical trauma, and the interaction of age and cultural consonance. The acceptable level of significance chosen was less than .01. Similar analyses were performed using Cohen's Perceived Stress Scale and the General Health Questionnaire as dependent variables in multiple regression analysis. These diverse analyses were utilized to generate an understanding of the complex relationships between the cultural syndrome of *susto* and social stress, historical trauma, and emotional and mental well-being.

Chapter 5: Cultural Domain Analysis Results

The following chapter consists of discussion of the various results associated with cultural domain analysis. Results from free listing, pile sorting, and ranking will be described as they related to the process of data collection.

Phase one: Free list Analysis

The first free list was obtained in response to the question: “What is the difference between good men and bad men in the Callejón de Huaylas?” A total of 84 different characteristics were generated; the first seven terms on the list were the most commonly stated terms used by at least 20 percent of the sample. It should be noted here that I collapsed a number of specific terms in order to generate these categories (e.g., a man who goes out with other women and a womanizer were placed in the same category of “cheats”). Some items such as “beats his wife” and “he does not beat his wife” were included because they represent positive and negative connotations. In order to have a sampling of both frequently-chosen and more rarely-named items I selected three other items of interest. The following 10 terms were selected for further investigation and are as follows (the original Spanish terms are listed along with the Spanish translation):

1. drunken-*borracho*
2. beats his wife-*le pega a su esposa*
3. provides for his family-*mantiene a su familia*
4. abandons family- *abandona a su familia*
5. cheats-*saca la vuelta con otra mujer*

6. looks after his home- *vela bien por su hogar*
7. he does not beat his wife- *no le pega a su esposa*
8. hard-working- *trabajador*
9. avoids his family by not coming home- *se para en la calle y no llega a la casa*
10. does not work much- *no trabaja mucho*

The second free list was generated in response to the following question: “What is the difference between good women and bad women in the Callejón de Huaylas? A total of 81 terms were generated in this list; the seven most commonly stated terms were used by 20 percent of the sample). It should be noted here that once again we collapsed a number of specific terms in order to generate these categories (e.g., providing food for children and taking care of children were listed under the category of “takes care of children”). Some items such as “takes care of children” and “does not take care of children” were included because they represent positive and negative connotations. In order to have a sampling of both frequently-chosen and more rarely-named items we selected four other more rare items, the following 11 terms were selected for further investigation (the terms are listed along with the Spanish translation):

1. takes care of husband- *atiende a su esposo*
2. takes care of children- *atiende a sus hijos*
3. takes care of home- *mantiene el hogar*
4. does not take care of children- *no cuida a sus hijos*
5. liberal- *liberal*
6. respectful- *respetuosa*
7. does not take care of the home- *no cuida bien a su hogar*
8. beats husband- *le pega a su esposo*
9. is a gossip- *chismosa*
10. cooks- *cocina*
11. washes clothes- *lava la ropa*

The third free list was generated in response to the following question: “What is the difference between good farmers and bad farmers in the Callejón de Huaylas?” This generated a list of 93 terms; the ten most common terms were used by at least 20 percent of the sample. It should be noted here that we collapsed a number of specific terms in order to generate these

categories (e.g., inviting neighbors to dinner and having a meal with neighbors were grouped under the same category of “invites neighbors to eat”). Some items such as “does not share harvest” and “shares harvest with neighbors” were included because they represent positive and negative connotations. In order to have a sampling of both frequently-chosen and more rarely-named items four more items of interest were added. The following 14 terms were selected for further investigation (the terms are listed along with the Spanish translation):

1. does not share harvest- *no comparte la cosecha con los vecinos*
2. shares harvest with neighbors- *comparte la cosecha con los vecinos*
3. helps neighbors with their harvest- *ayuda cosechar a los vecinos*
4. invites neighbors to eat- *les invita la comida a los vecinos*
5. serves as a an authority in the community - *funciona como autoridad en su comunidad*
6. throws rocks- *tira piedras*
7. robs- *roba*
8. does not allow others to walk on his or her land- *no deja que se pise su chacra*
9. plants- *siembra*
10. allows neighbors to plant on their land- *permite a los vecinos sembrar en su terreno*
11. envious of others harvests- *envidioso de la cosecha de los vecinos*
12. does not help neighbors- *no ayuda a los vecinos*
13. helps repair irrigation ditches- *ayuda reparar las acequias para regar*
14. raises animals- *cría sus animals*

Thirty-seven percent of informants mentioned not sharing with neighbors, making that the most common characteristic of a bad farmer. Fighting with neighbors was brought up by 33 percent of informants, while being drunk was listed by 27 percent of informants. Envy is often feared in Andean society, and 23 percent of informants described a bad farmer as envious.

The most frequently listed characteristic of a good farmer was sharing with neighbors; it was mentioned by 53 percent of informants. Inviting neighbors to eat a meal was listed by 23 percent of informants. Helping neighbors and planting crops were each listed by 20 percent of informants. Being a hardworker, giving gifts to neighbors, and being a community authority

were all listed by 17 percent of informants. The most commonly listed characteristics associated with bad and good farmers highlight the importance of neighbor relationships in Andean culture.

The fourth free list was generated in response to the following question: “What is the difference between good fathers and bad fathers in the Callejón de Huaylas?” This generated a list of 72 terms; the eight most commonly used terms were used by at least 20 percent of the sample. It should be noted here that we collapsed a number of specific terms in order to generate these categories (e.g., drinking too much and being an alcoholic were placed in the same category of “drunken”). Some items such as “does not give education to children” and “teaches children” were included because they represent positive and negative connotations. In order to have a sampling of both frequently-chosen and more rarely-named items we chose two other more rare items, the following 10 terms were selected for further investigation (the terms are listed along with the Spanish translation):

1. hits children- *les pega a sus hijos*
2. makes sure children get an education- *les da educación a sus hijos*
3. feeds children- *no falta la comida*
4. buys clothes for children – *compra los vestidos para sus hijos*
5. does not give an education to children- *no educa bien a sus hijos*
6. shares his land with his children- *comparte su terreno con sus hijos*
7. selfish- *egoista*
8. treats all his children equally- *trata igual a todos sus hijos*
9. gives advice to his children- *les aconseja a sus hijos*
10. teaches children- *les enseña a sus hijos*

The fifth free list was generated in response to the following question: “What is the difference between good mothers and bad mothers in the Callejón de Huaylas?” This generated a list of 58 terms; the five most commonly used terms were used by at least 20 percent of the sample. It should be noted here that we collapsed a number of specific terms in order to generate these categories (e.g., preparing lunch for children and giving children adequate nutrition were

placed in the “feeds children” category). In order to have a sampling of both frequently-chosen and more rarely-named items two other items were included. The following seven terms were selected for further investigation (the terms are listed long with Spanish translation):

1. concerned for well-being of children- *le importa el bienestar de sus hijos*
2. beats children- *les pega a sus hijos*
3. sacrifices for children- *trabaja para mantener a sus hijos*
4. makes children work- *les hace trabajar a sus hijos*
5. street women- *mujer de vida*
6. throws children out- *bota a sus hijos*
7. defends children- *defiende a sus hijos*

The sixth free list was generated in response to the following question “What supplies and tools do farmers use to plant and harvest their farms in the Callejón de Huaylas?” This generated a list of 53 terms; the 18 most commonly stated terms were used by at least 20 percent of the sample.



Figure 5.1: Queshe

In order to have a sampling of both frequently-chosen and more rarely-named items six more items of interest were added, the following 24 terms were selected for further investigation (the terms are listed along with the Spanish translation):

1. seeds for maize- *semillas de maíz*
2. synthetic fertilizer- *abono químico*
3. manure- *abono de animales*
4. plough- *taclla y punta (arado)*

5. team of yoked bulls- *yunta*
6. pick axe- *pico*
7. shovel- *lampa*
8. queshe- (a specialized Andean tool with no translation available) (see figure 5.1)
9. crowbar- *barreta*
10. seed for potatoes- *semillas de papa*
11. seeds for oca- *semillas de oca*
12. seeds for wheat- *semillas de trigo*
13. seeds for lima beans- *semillas de habas* (see figure 5.2)
14. seeds for barley- *semillas de cebada*
15. seeds for olluco- *semillas de olluco*
16. yoke- *yugo*
17. sickle- *hoz*
18. donkey- *burro*
19. helpers- *gente para ayudar*
20. workers- *peones*
21. horse- *caballo*
22. land- *terreno*
23. woman to plant- *una mujer para sembrar* (see figure 5.3)
24. insecticide- *insecticidas*



Figure 5.2: Women Sorting Lima Bean Harvest



Figure 5.3: Women Planting Potatoes

The farm tools free list that was analyzed reinforces the data from the good farmer and bad farmer free lists by indicating how the material culture confirms specific elements of the farmer social roles. The *yunta* (a team of yoked bulls), the pickaxe, the shovel, and the potato were found to be the most important farm necessities. The *yunta* was the most frequently named farm tool by informants with 90 percent of informants naming the *yunta* as a necessary farm tool. The shovel or *lampa* was also commonly named by 83 percent of informants with 83 percent describing it as an important tool. The pickaxe or *pico* typically accompanied the shovel as the other necessary hand tool for Andean farmers; 80 percent of the sample of informants mentioned it as important when planting and harvesting. The potato or *papa* was the only seed mentioned in the most commonly named items with 80 percent of informants listing its significance to an Andean farmer. Clearly, this demonstrates that the potato is the most essential crop planted by Andean farmers.

Susto symptoms were the seventh free list generated to look at the domain of *susto*. The following question was asked: “If I have the flu, my head hurts, I have muscle pain, fever, and my throat hurts. These are symptoms. If a person has *susto*, what are the symptoms? How does

his/her body feel? How does his/her mind feel? This generated a list of 68 terms; the 12 most commonly used terms were used by at least 20 percent of the sample. In order to have a sampling of both frequently-chosen and more rarely-named items, the following 22 items were selected for further investigation (the terms are listed along with the Spanish translation):

1. fever- *fiebre*
2. vomiting- *vómitos*
3. jumping in the night- *salta de noche*
4. headache- *dolor de cabeza*
5. cannot sleep- *no puede dormir*
6. no desire- *sin ánimo de nada*
7. sickly- *enfermizo/a*
8. has nightmares- *sueña con malas cosas*
9. feels as if falling to the ground- *se bota a la tierra*
10. cry- *llora*
11. bored- *aburrido/a*
12. bodily pain all over- *le duele todo el cuerpo*
13. dried up- *se seca*
14. worried- *preocupado/a*
15. thinks about wanting to get cured- *piensa en querer curarse*
16. loss of appetite- *pierde el apetito*
17. down/depressed- *decaído/a*
18. his/her spirit leaves- *el espíritu puede salir*
19. heat in the stomach- *calor en la barriga*
20. frightened easily- *fácilmente asustado/a*
21. heart pain- *dolor de corazón*
22. earth absorbs you - *la tierra le absorbe*

Historical events were the eighth domain investigated by the researchers. The following question were asked: “Please list all the traumatic/bad things that have happened in the valley that you can remember?”, “Please list all the important events that have happened in the valley that you can remember?”, and “Can you remember a time in which it was dangerous to live in the Callejón de Huaylas?” This generated a list of 20 terms; the five most commonly stated terms were used by at least 20 percent of the sample. In order to have a sampling of both

frequently-chosen and more rarely-named items, the following terms were selected for further investigation (the terms are listed along with the Spanish translation where applicable):

1. *Fiesta de San Isidro*
2. *Fiesta de San Agustín*
3. *Fiesta Señor de los Milagros*
4. *Fiesta de San Miguel*
5. *Fiesta de Santa Rosa de Lima*
6. *Fiesta de Santa Cruz*
7. *Fiesta Patronal de Marcac*
8. the terrorists went around killing authorities- *Los terrucos andaban matando autoridades*
9. were unable to go out at night- *No se podía salir de noche*
10. the flood of 1988 caused by the gold mine- *La aluvión de 1988 con la mina de oro*
11. the flood of December 1940- *La aluvión de diciembre 1940*
12. the flood of 1971- *La aluvión de 1971*
13. the frost of the harvest in 2008- *Helada la cosecha en 2008*
14. the money lost its value from one day to the next day- *El dinero perdió su valor de un día al siguiente día*
15. they bombed houses- *Bombardeaban casas*
16. the cholera epidemic of 1990-1992- *La peste de cólera de 1990-1992*
17. people pretended to be terrorists to steal money- *Había personas que fingían ser terroristas para pedir plata*
18. the earthquake of 1970- *El terremoto/sismo de 1970*
19. knocking down the high voltage transmission towers - *Volaban las torres de alta tensión*
20. the disappearing of people- *Se desaparecieron las personas*

The free list of characteristics of bad and good farmers highlights the importance of neighbor relationships (*los vecinos*) in the Andes. The characteristics of not sharing and envy of other neighbors were common on many informant free lists in which they were asked to define a bad farmer, suggesting that many Andean highlanders believe that neighbors should not engage in these activities. The indicated characteristics of a good farmer support the notion that neighbors are needed for successful farming due to the fact that sharing with neighbors and assisting neighbors with planting and harvesting were listed by many informants as positive behaviors for a good farmer. Describing the neighbor relationships in her community, an

informant said: “*La gente trabaja junta –apoyándose, ayudándose*”. (“The people work together--supporting each other, helping each other”). The highland culture necessitates cooperation between neighbors as a balancing mechanism, but sometimes these neighbor relationships can deteriorate, leaving some highland farmers with no alternative but to hire help or to seek other means of income away from the farm.

Andean farmers use many tools and seeds to grow a variety of crops in sometimes-marginal mountainous environments. The terrain of the Andes is steep; therefore, a tractor cannot be used to plow the land. Instead highland farmers use the *yunta*, a plowing team of two bulls joined together by a yoke and attached to a metal plow. These images emphasize the strain the animals and the farmers are under in trying to prepare the land. The economic marginalization of most Andean farmers who have few resources leaves the *yunta* as the only viable means to prepare the land. A male informant describes the importance of the *yunta*: “*Primero se necesita tierra. Después se usan los toros, los arados y los yugos para preparar el terreno*”. (“First land is needed. Then bulls, plows, and yokes are needed to prepare the land.”) For farmers in the Callejón de Huaylas the *yunta* is a crucial component needed to prepare the land for planting. Informants in Pampamarca were observed planting potatoes using the *yunta*. First, the *yunta* breaks the ground open by cutting long lines across the field; then, women place seed potatoes in the fresh lines while young men place fertilizer with the seeds. Lastly, the *yunta* cuts another line across the field beside the previous one to cover the seed potatoes. The analyses of the free lists are further supported by the sociocultural data gathered from informant focus groups and participant observation.

The potato, shovel, and pickaxe are also regarded as highly important to Andean farmers. The potato was listed on most informant free lists indicating its importance as a food crop.

However, the potato is more than food in the Andean cultural context it represents the essence of being Andean. A male informant described the importance of the potato, “*La papa es parte de preparar el terreno. La papa es el básico*”. (“The potato is part of the preparing of the land. The potato is basic.”) For Andeans, the potato is a staple food; furthermore, it represents the Andes because the potato was first domesticated in this part of the world and virtually all Andean farmers plant potatoes.

Andean highlanders often inhabit marginal lands and are subjected to economic marginalization, which contributes to their reliance on the *yunta* to prepare land and to develop cultural social support networks, such as neighbor relationships. The first phase of cultural domain analysis reported here allows for informants to describe to the researcher what is important in their society as opposed to the researcher making his or her own assumptions. The finding emphasizing neighbor relationships within highland agriculture is useful in showing that the neighbor has a role in Andean society, and if the social cohesiveness of a community has eroded then those farmers who are not fulfilling the culturally prescribed role of a good neighbor may be under social stress. The *yunta*'s importance to highland agriculturalists indicates that the *yunta* is necessary to successfully farm and to adequately fulfill the social role of farming; however, it also suggests that if a farmer lacks access to a *yunta* he or she may feel social stress. These free list data were used to develop a set of terms to be used for unconstrained pile sorting. The most common terms and a few of the less common from the free lists for the domains of good farmer, bad farmer, and farm tools were used to create cards for informants to sort into piles based on how they would categorize these terms. The emphasis in this type of exercise is to elicit informant models of how they view the relationships between socioculturally derived elements. These findings point to contexts in which social stress may occur within Andean

society and identify potential areas where it may become associated with *susto* and other cultural syndromes.

Phase 2: Unconstrained Pile Sort Analysis

Farm Requirements Pile Sort

The MDS representation of the pile sorts of farming requirements in two dimensions is shown in figure 5.4 (stress = .088). The items that are grouped closely together in the cluster analysis appear in close proximity to one another on the MDS. One dimension of the MDS consists of a qualitative organizing of items that farmers use together. For example, the group at the left middle represents seeds used for planting. At the bottom left of the figure is a group of items required for preparing land for planting, and the grouping at top represents items used during the harvesting of crops.

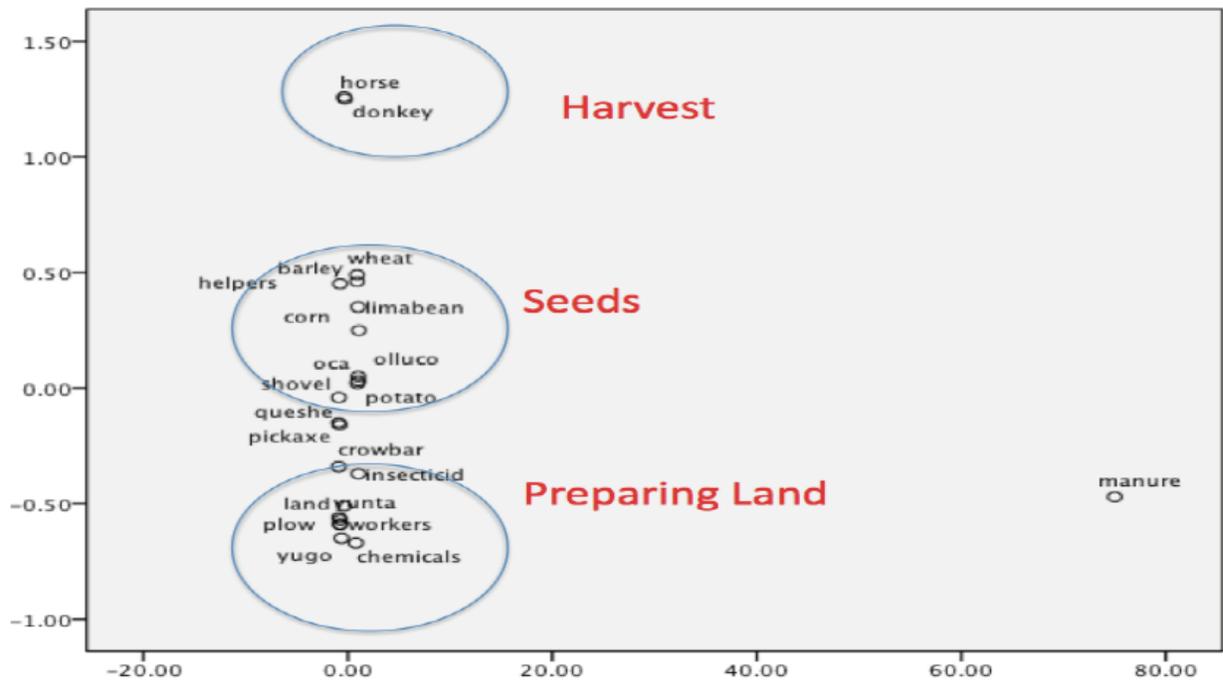


Figure 5.4: Multidimensional Scale Representation of Farming Requirements

According to information gathered during interviews, individual items were listed on index cards. Then informants organized the farm tools into groups based on how a farmer uses those items. Additionally, they explained what the group of items represented. For example, a 29-year old male farmer, who is also a construction worker with only a primary school education, created a grouping of items similar to the figure pictured here. He referred to the group at the top as items “used for processing wheat” from the harvest. The seed grouping was described as “things we need for planting seeds”, and his grouping of tools and items required for preparing the land was identified “things one needs to prepare the land.” Similarly, a 36-year old female farmer and weaver with only 5 years of education described the top group as “for the harvest one needs the sickle and donkey”; furthermore, “the potato and maize are important” was her description of the seeds group. She described the tools needed to prepare the land based on the order in which they are used in the field.

Historical Events Pile Sort

The MDS representation of the pile sorts of historical events in two dimensions is shown in figure 5.5 (stress = 0.002). The items that are grouped closely together in the cluster analysis appear in close proximity to one another on the MDS. It appears that one dimension of the MDS consists of an evaluative grouping of characteristics of the same or similar events. For example, the group at the bottom right represents all the highland fiestas. At the bottom left of the figure is a group of items all related to the Peruvian terrorism events of 1980s.

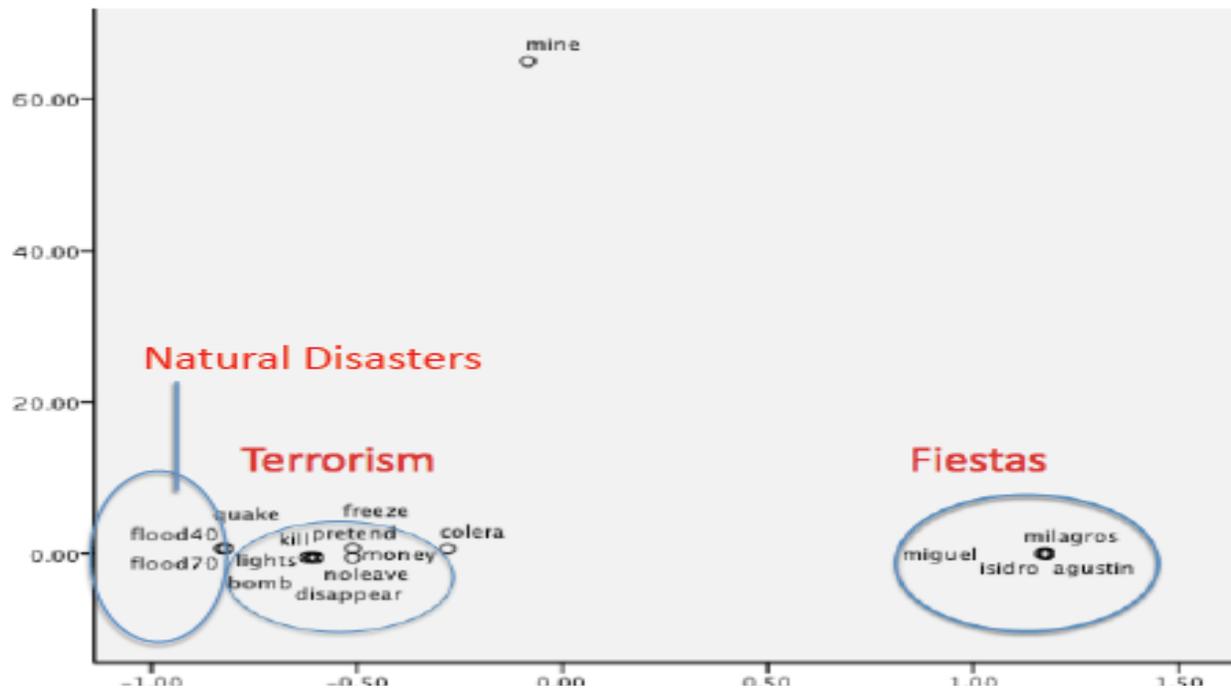


Figure 5.5: Multidimensional Scale Representation of Historical Events

According to information gathered during interviews, individual items were listed on index cards. Then informants organized the historical events into groups based on how they thought items were related. Additionally, they explained what the group of items represented. For example, a 58-year old female farmer with no formal education created a grouping of items similar to the figure above. She referred to the group at the right as “the traditional festivals of the Callejón de Huaylas” and the grouping at the bottom left was described as “the time of terrorism.” Similarly, a 23-year old male *colectivo* (form of public transportation) money collector with 11 years of education described the fiesta group as “the celebrations.” “The humanbeings, ‘*los terrucos*’” was how he described the terrorism group.

Susto Symptoms Pile Sort

The MDS representation of the pile sorts of *susto* symptoms in two dimensions is shown in figure 5.6 (stress = 0.183). The items that are grouped closely together in the cluster analysis

appear in close proximity to one another on the MDS. One dimension of the MDS consists of differing definitions of illness, grouping of symptoms that are associated with general sickness cluster closer together and classic symptoms of the specific illness of *susto* are organized together. For example, the group at the right represents all the symptoms associated with generalized sickness. At the left of the figure is a group of classic *susto* symptoms; these symptoms seem culturally and ethnographically based, such as “being thrown to the ground.

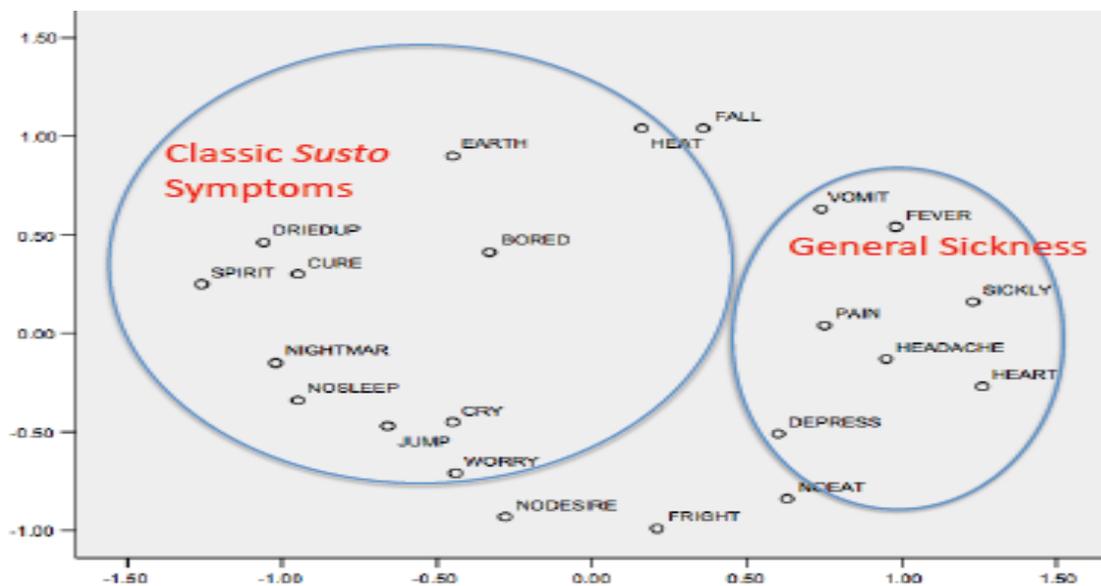


Figure 5.6: Multidimensional Scale Representation of *Susto* Symptoms

According to information gathered during interviews, individual items were listed on index cards. Then informants organized the symptoms into groups based on how informants organize the *susto* symptoms based on the relationship each symptom has to illness severity and to one’s cultural knowledge base. Additionally, they explained what the group of items represented. There are some symptoms that some informants are not familiar with such as “*el espíritu puede salir*,” which means “the spirit can leave” [the body]. Informants identify the symptoms based on either personal experience with the illness of *susto* or cultural knowledge.

The unconstrained pile sorts seem to suggest that there are two different models of *susto*: one that contains symptoms associated with any illness such as fever, head pain, and nausea: and another model that contains elements that seem to be specific to the illness of *susto* like, “*el espirtu puede salir*,” (the sprit can leave), “*se bota a la tierra*,” (being thrown to the ground), and “*sin ánimo de nada*,” (does not feel like doing anything). For example, a 64-year old female farmer with 1 year of formal education created a grouping of items similar to the figure pictured here. She referred to the group at the right as “the initial symptoms of *susto*.” The grouping at the left was described as “symptoms that are related and happen when the *susto* is bad.” Similarly, a 25-year old male farmer with 14 years of education described the symptoms by severity. He said “the head pain is first, and then it gets worse.” Additionally, he organized the symptoms as initial, intermediate, and worst.

Social Roles Pile Sort

The MDS representation of the pile sorts of social roles in two dimensions is shown in figure 5.7 (stress = 0.092). The items that are grouped closely together in the cluster analysis appear in close proximity to one another on the MDS. It appears that one dimension of the MDS consists of a qualitative appraisal of whether a characteristic is positive or negative. Informants also seem to group characteristics associated with the social role of neighbor. For example, the group at the right represents bad characteristics. The grouping at the top of the negative pile contains characteristics such as “envious” that are associated with a bad neighbor. At the left of the graph is a group of positive characteristics. The organization of terms such as “helping neighbor” and “inviting neighbor to eat” at the top of the positive group suggests that these terms are regarded as important characteristics of a good neighbor. The group at the middle bottom of

the MDS consists of not hitting your children. There seems to be two different models among informants as to whether hitting one's children is a good or bad parenting technique.

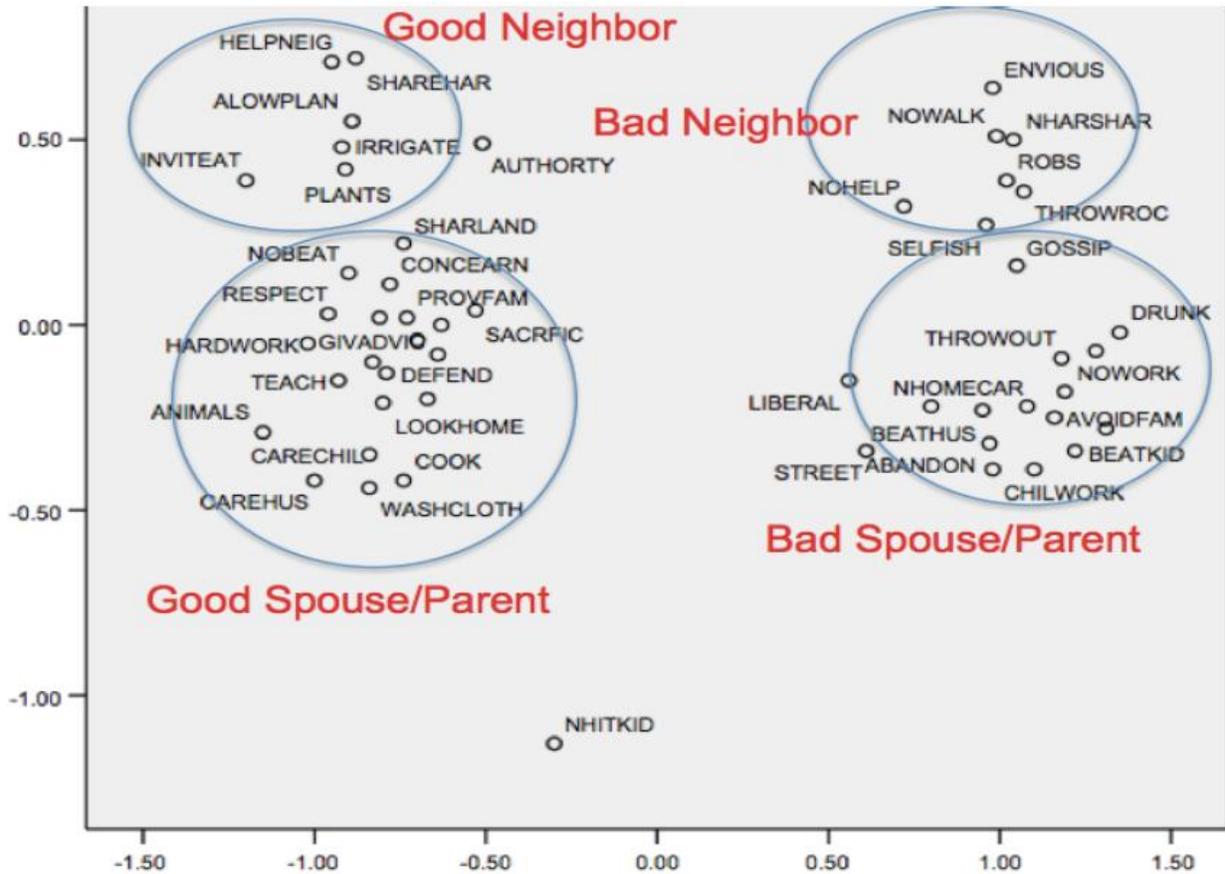


Figure 5.7: Multidimensional Scale Representation of Social Roles

According to information gathered during interviews, individual items were listed on index cards. Informants organize the social roles based on their positive or negative connotation and their association with neighbor relationships. Additionally, they explained what the group of items represented. The pile sorts seem to suggest that neighbor relationships are important in Andean farming community. The unconstrained pile sorts suggest that there are positive and negative models of social roles. The data suggests that there is disagreement among informants on hitting one's children but not in regards to other terms that are associated with parenting or

being a spouse. For example, a 21-year old male student with 13 years of formal education created a grouping of items similar to the figure. He referred to the group at the right as “bad man or woman,” and he separated out the characteristics that refer specifically to a person who is not neighborly, which he called “bad neighbor.” The grouping at the left was described as “good man or woman.” He also identified those terms that represented the ideal person he would want to have for a neighbor and called this the “good neighbor” group. Similarly, a 64-year old female farmer with one year of education described social roles by positive and negative qualities being a male, female, and neighbor in a highland community. She said “a good neighbor helps,” and she organized the piles as qualities of a good or bad neighbor, man, or woman. She said a bad man “hits his wife” and [is] “a drunk.” These qualities appear close together in the MDS, suggesting that informants associated these characteristics with the negative male social role.

Phase 3: Constrained Pile Sorting and Ranking Analyses

Farm Tool Ranking

When the first set of rankings was analyzed using cultural consensus analysis, there was consensus (4.1:1.2, avg. competence = .60 +/- .30). Further examination of the data suggests that the farther one lives from the more urban Huaraz, the higher ones competence (.5 or greater competence) in the model of farm tools. There is agreement on what one needs in order to farm in the Callejón de Huaylas. There also seems to be a shared model of the tools, seeds, and other items one needs to be a successful Andean farmer.

Susto Symptoms Ranking

When the *susto* symptoms rankings were analyzed using cultural consensus analysis, there was no consensus for the sample as a whole. There was, however, consensus among persons

with less than a secondary school education (median competence=0.62) versus persons with at least some secondary education (median competence=0.30). Education level is a significant factor in *susto* competence; the lower the competence in *susto* the higher the education level. The abandonment of the folk illness model is related to the expansion of health knowledge provided in formal health classes in school. In other words, education complicates one's framework for talking about illness. Individuals learn about symptoms like headaches and nausea at health clinics and health classes in school. Distance is also a factor in *susto* competence: people who live the farthest from the more urban area of Huaraz tend to have the highest competence in *susto* symptoms, and the closer one lives to Huaraz the more likely he or she is to have been impacted by alternative models for health and illness since he or she is less isolated than farmers living in remote hamlets.

Social role ranking

When the third set of rankings was analyzed using cultural consensus analysis, there was no consensus for the sample as a whole. Again, however, there were subgroups. I then clustered the cases on the rankings, in order to examine the consensus within the two subgroups, looking for covariate similarities in education level or rural versus urban living context. Within the smaller subgroup (n=10), the rankings did achieve the consensus (4.3:1.7, avg. competence=0.648, \pm 0.110). Within the larger subgroup (n=18), there was no consensus, which seems to suggest that there are two models for the domain of social roles. Education level is a significant factor in social role competence: the lower the competence in social roles the higher the education level. Distance is also a factor in social role competence. People who live the farthest from Huaraz tend to have the highest competence in social roles.

Education complicates one's framework for talking about social roles. Individuals learn

through socialization in school that there are certain roles that men and women fulfill in society, and this complicates one's lexicon for defining social roles. Distance is also a factor in social roles competence. People who live the farthest from Huaraz tend to have the highest competence in social roles. The closer one lives to Huaraz, the more likely they are to have been impacted by alternative models for social roles since they are becoming less isolated than farmers living in remote hamlets. The model for an individual working in a more urban area will differ from the social roles that are necessary to successfully fulfill the role of an Andean farmer, because presumably one does other activities in addition to or in place of farming.

At this point in the analysis it is necessary to review what has been learned in regards to specific cultural domains. The following key points have been identified:

- With respect to historical events, respondents free-listed items that can be used to create a series of significant events for the Callejón de Huaylas. The responses to the free list task required only unconstrained pile sorting to understand the domain. It is comprised of the themes of natural disasters , terrorism, and fiestas.
- The domain of farm tools was dominated by the idea of what one needs to farm. Respondents tended to separate different tools based on how each is used in conjunction with the other to perform farm work.
- The domain of social roles was thoroughly dominated by the idea of positive and negative characteristics of social roles. The way in which these terms were originally elicited in the free listing contributed to the insistence of this qualitative evaluation. The pile sorting confirmed the initial impressions from free listing that their were good and bad characteristics associated with social roles. Informants identified whether a characteristic was good or bad, and then decided which social role it was most closely related to such as a “good man” or a “bad neighbor.” There

was a clear understanding of what one should be doing to fulfill their social role of being Andean. More education contributed to lack of competence in the model for social roles and adherence to an alternate model for social roles. Further distance from Huaraz equals more remoteness and was associated with higher competence in the model.

- The domain of *susto* symptoms was thoroughly dominated by the idea of what comprises a symptom. There seems to be multiple understandings of *susto*: one that comprises traditional culturally salient symptoms associated only with *susto* and another approach that contains elements of general malaise and decline in health. More education contributes to one's lack of competence in the model of *susto*. More distance from Huaraz equals . being more remote and was related to competence in the model.

Chapter 6: Case –Control Results

The cultural domain analysis data were used to create the various research scales employed for the case-control data collection. The *susto* symptoms were used to create the Susto Symptoms Scale. The Andean social role data comprised the Cultural Consonance in Social Role Expectations. The information on historical trauma in the valley created the Historical Trauma Scale. The data gathered from the epidemiological case-control phase of the research project were analyzed using a variety of statistical techniques. Each scale used in this phase was subjected to internal consistency reliability analysis and bivariate associations in the data were determined using t-tests and correlations. The data were also analyzed by employing multivariate models to determine the complex relationships between the independent variables of cultural consonance and historical trauma and the dependent variables including the *Susto* Symptoms Scale, General Health Questionnaire, and Cohen's Perceived Stress Scale.

The research project focusing on *susto* and social stress explored two main hypotheses. The first hypothesis was that individuals with lower cultural consonance, would score higher on the Cohen's Perceived Stress Scale, General Health Questionnaire, and *Susto* Symptoms Scale because they would be weaker physically and emotionally. Testing this hypothesis among Andean highland farmers was motivated by the Rubel et al. (1984) study of *susto* in Mexico, where the researchers found that *susto* sufferers are

more likely to be physically weaker. The second hypothesis was focused on the issue of historical trauma.

It follows Pedersen et al.'s (2010) model that suggests that past and present social conditions in the Andes are a part of highlanders' cultural model of the world. I hypothesized that individuals who were particularly sensitive to Andean historical traumas would score higher on the Historical Trauma Questionnaire, which in turn would increase their risk of *susto*, and they would have higher scores on the Cohen Perceived Stress Scale, the General Health Questionnaire, and the *Susto* Symptoms Scale.

Reliability Analysis Tests of Scales

The Cultural Consonance in Social Role Expectations Scale, the *Susto* Symptoms Scale, and the Historical Trauma Questionnaire were all created based on cultural domain analysis in those respective domains. Furthermore, the three scales that were developed for this research project were tested to assess the overall reliability of each scale and the contribution of each item to a culturally relevant measure.

Table 6.1: Reliability Analysis of *Susto* Symptoms Scale

| Symptoms | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Total Item Correlation | Alpha if Item Deleted |
|--|----------------------------|--------------------------------|------------------------|-----------------------|
| Having bad dreams | 12.05 | 38.74 | .52 | .92 |
| Body pain | 12.08 | 38.41 | .56 | .92 |
| Bored | 12.20 | 38.33 | .51 | .92 |
| To feel like you are falling to the ground | 12.40 | 37.58 | .62 | .92 |
| Cry | 12.20 | 38.06 | .56 | .92 |
| To think about getting cured | 11.96 | 39.38 | .49 | .92 |
| Depressed | 12.16 | 37.44 | .68 | .92 |
| Dry up | 12.47 | 38.09 | .56 | .92 |
| The earth absorbs you | 12.46 | 37.75 | .61 | .92 |
| Fever | 12.19 | 38.58 | .47 | .92 |

| | | | | |
|------------------------|-------|-------|-----|-----|
| To feel frightened | 12.24 | 37.15 | .70 | .92 |
| Head pain | 12.10 | 38.36 | .55 | .92 |
| Heart pain | 12.40 | 37.62 | .62 | .92 |
| Jumping in the night | 12.33 | 37.19 | .68 | .92 |
| No appetite | 12.27 | 37.88 | .57 | .92 |
| No energy | 12.12 | 38.48 | .52 | .92 |
| Sick | 12.32 | 37.25 | .67 | .92 |
| Your spirit leaves you | 12.51 | 38.25 | .55 | .92 |
| Heat in the stomach | 12.25 | 37.69 | .60 | .92 |
| Vomiting | 12.44 | 37.65 | .62 | .92 |
| Worry | 11.99 | 39.67 | .39 | .92 |
| No sleep | 12.17 | 38.25 | .53 | .92 |

Cronbach's Alpha .93

Using the information from the cultural domain analysis, I developed a *Susto* Symptoms Scale (see table 6.1). No items had dramatically low item-total correlations so all were retained for the scale. Subsequently, I administered the *Susto* Symptoms Scale (Cronbach's alpha =.926) to 102 informants (see table 6.1). The maximum score one can receive on the *susto* scale is 22, with a sample mean score of 12.8 and a mode of 8 symptoms.

Table 6.2: Reliability Analysis of Cultural Consonance in Social Role Expectations Scale

| Cultural Consonance in Social Role Expectations Scale | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Item Total Correlation | Alpha if Item Deleted |
|---|----------------------------|--------------------------------|------------------------|-----------------------|
| Do you plant crops every year | 10.55 | 7.88 | .26 | .60 |
| I sometimes do not work very hard | 10.21 | 7.75 | .21 | .61 |
| I cannot share my harvest with my neighbors | 10.39 | 6.48 | .31 | .59 |
| My neighbors do not have lunch with me often | 10.72 | 6.95 | .28 | .59 |
| I find it difficult to take care of my husband/wife | 9.96 | 7.40 | .28 | .59 |

| | | | | |
|--|-------|------|-----|-----|
| Educating my children is difficult | 10.51 | 6.87 | .41 | .56 |
| Sometimes my wife/husband hits me | 9.43 | 7.18 | .26 | .60 |
| My children are sometimes not well-cared for | 9.92 | 7.69 | .22 | .60 |
| It is difficult to feed my children | 10.18 | 7.34 | .32 | .58 |
| Sometimes I do not have enough work to support my children well. | 10.46 | 7.08 | .36 | .57 |

Cronbach's Alpha .62

Using the information from the cultural domain analysis, I developed the Cultural Consonance in Social Role Expectations Scale (see table 6.2). However, some of the items did have low item-total correlations which prevented their inclusion in the Cultural Consonance in Social Role Expectations. These items that were deleted greatly changed the alpha level of the scale. The items deleted were “Do you cook everyday?,” “Do you wash clothes every week?,” “Sometimes my home is not supported as well as I would like.,” “It is important that people think of me as a respectful person.,” “Sometimes my neighbors let me plant on their land.” The deletion of these items helps to further interpret the meaning of the Cultural Consonance in Social Roles Expectations.

I administered the Cultural Consonance in Social Role Expectations Scale (Cronbach's alpha =.62) to 102 informants (see table 6.2). The maximum score one can received on the consonance scale is 39, with a sample mean score of 11.3 and a mode of 13.0.

Table 6.3: Reliability Analysis of Historical Trauma Scale

| Historically Traumatic Events | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Item Total Correlation | Alpha if Item Deleted |
|---|----------------------------|--------------------------------|------------------------|-----------------------|
| Were you impacted by the flood of 1988 caused by the gold mine | 3.4 | 4.86 | .34 | .58 |
| Were you impacted by the earthquake of 1970? | 2.7 | 3.67 | .38 | .56 |
| Were you impacted by the crop freeze in 2008 | 2.3 | 4.04 | .40 | .55 |
| Were you impacted by cholera epidemic 1990-92 | 3.1 | 3.98 | .49 | .51 |
| Were you impacted when the terrorists kidnapped and killed local political authorities, bombed houses, and destroyed high voltage towers? | 2.5 | 4.07 | .30 | .60 |

Cronbach's Alpha .62

Using the information from the cultural domain analysis, I developed the Historical Trauma Scale (see table 6.3). I administered the Historical Trauma Scale (Cronbach's alpha =.62) to 102 informants (see table 6.3). No items had dramatically low item-total correlations and so none were deleted from this scale. The maximum score one can receive on the trauma scale is 10, with a sample mean score of 3.6 and a mode of 2.0 traumas.

Table 6.4: Reliability Analysis of General Health Questionnaire

| General Health Questionnaire | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Item Total Correlation | Alpha if Item Deleted |
|--|----------------------------|--------------------------------|------------------------|-----------------------|
| Have you recently been able to concentrate on what you were doing | 18.04 | 13.07 | .11 | .66 |
| Have you recently lost much sleep over worry? | 16.92 | 11.47 | .38 | .61 |
| Have you recently felt that you were playing a useful part in things | 18.08 | 12.10 | .29 | .63 |
| Have you recently felt capable of making decisions | 18.20 | 13.07 | .08 | .67 |
| Have you recently felt constantly under strain? | 17.18 | 12.05 | .33 | .63 |
| Have you recently felt that you couldn't overcome your difficulties? | 17.05 | 12.70 | .16 | .65 |
| Have you recently been able to enjoy your normal day-to-day activities?- | 18.00 | 12.59 | .25 | .64 |
| Have you recently been able to face up to your problems? | 17.97 | 12.28 | .29 | .63 |
| Have you recently been feeling unhappy and depressed?- | 17.00 | 12.67 | .21 | .64 |
| Have you recently been losing self-confidence in yourself?- | 17.12 | 11.22 | .54 | .59 |
| Have you recently been thinking of | 17.4608 | 11.08 | .50 | .59 |

| | | | | |
|--|---------|-------|-----|-----|
| yourself as a worthless person | | | | |
| Have you recently been feeling reasonably happy, all things considered?- | 18.0882 | 12.06 | .43 | .61 |

Cronbach's Alpha .62

In addition to the scales I had developed using cultural domain analysis, I also employed the General Health Questionnaire to assess individual levels of physical well being (see table 6.4). Some of the items did have low item-total correlations that could have prevented their inclusion in the General Health Questionnaire; however, since this is a published scale the items were not deleted. Furthermore, the retention of the items with low item-total correlations does not change Cronbach's alpha substantially. I administered the General Health Questionnaire (Cronbach's alpha =.66) to 102 informants (see table 6.4). The maximum score one can receive on the health scale is 36, with a sample mean score of 19.2 and a mode of 18.0.

Table 6.5: Reliability Analysis of Cohen's Perceived Stress Scale

| Cohen Perceived Stress Scale | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Item Total Correlation | Alpha if Item Deleted |
|--|----------------------------|--------------------------------|------------------------|-----------------------|
| In the last month, have you been able to sleep enough hours? | 34.14 | 53.03 | -.07 | .67 |
| In the last month, have you felt upset because of some unexpected situation? | 34.19 | 44.92 | .40 | .61 |
| In the last month, have you felt incapable of controlling important | 34.52 | 45.59 | .34 | .62 |

| | | | | |
|---|-------|-------|-----|-----|
| events in your life? | | | | |
| In the last month, have you felt constantly tense | 34.35 | 46.42 | .27 | .63 |
| In the last month, did you successfully resolve the unpleasant arguments in your life | 34.03 | 49.37 | .13 | .65 |
| In the last month, did you feel that you successfully faced the important changes that were occurring in your life? | 33.95 | 47.84 | .27 | .63 |
| In the past month, did you feel confident in your ability to manage your personal problems | 33.55 | 46.50 | .35 | .62 |
| In the last month, did you feel that things were turning out for you the way you wanted? | 34.22 | 48.78 | .19 | .64 |
| In the last month, did you find that you were not able to resolve all the situations that you had to face? | 34.63 | 50.15 | .08 | .65 |
| In the last month, have you been able to control the unpleasant events in your life | 34.24 | 48.77 | .15 | .64 |

| | | | | |
|---|-------|-------|-----|-----|
| In the last month, did you feel that you were brought to a standstill by the situations that were happening to you? | 34.51 | 46.31 | .31 | .62 |
| In the last month, have you felt upset by the situations that were out of your control | 34.04 | 45.16 | .40 | .61 |
| In the last month, have you found yourself thinking about the situations that you have to resolve | 33.68 | 46.45 | .38 | .61 |
| In the last month, have you been able to manage your time according to your own needs? | 33.87 | 46.66 | .33 | .62 |
| In the last month, did you feel that your problems had mounted up on you? | 34.20 | 45.18 | .42 | .61 |

Cronbach's Alpha .64

Despite the fact that several of the item-total correlations are quite low, I chose to retain all of the items for the scale, since it was developed for this total set of items and is widely used in other studies. Furthermore, the retention of the items with low item-total correlations does not change Cronbach's alpha substantially.

In addition to the scales I had developed using cultural domain analysis, I also used Cohen's Perceived Stress Scale to assess individual levels of mental well-being (see table 6.5). I administered the Cohen's Perceived Stress Scale (Cronbach's alpha = .64) to 102 informants (see

table 6.5). The maximum score one can receive on the stress scale is 64, with a sample mean score of 28.6 and a mode of 30.0.

Again, as in the case of the General Health Questionnaire, a number of the items of the Cohen scale have low item-total correlations; however, the scale shows good internal consistency reliability in other studies and has an acceptable overall Cronbach’s alpha here. Deletion of individual items does not increase the internal consistency reliability substantially. Therefore, all of the items were retained.

Descriptive Statistics of Main Independent Variables

Demographic Variables

Several demographic variables were used to describe the sample and to test if there was any association of them with *susto* status. The variables used were gender, age, and years of education.

Table 6.6 : Chi-Square Test of Significance for the Independent Variable of Gender and the Dependent Variable of *Susto* or Control Status

| Gender | <i>Susto</i> (n=51) | Control (n=51) |
|--------|---------------------|----------------|
| Female | 36 | 28 |
| Male | 15 | 23 |

p = .10

The Chi-Square test (see table 6.6) was used to determine the relationship that gender might have with *susto* or control status. It determined that 56 percent of females had *susto* compared with 39 percent of males and the difference was not significant. .

Table 6.7: Mann-Whitney U Tests of Significance of the Independent Variables of Age and Years of Education and the Dependent Variable of *Susto* or Control Status (variable medians)

| Demographic Variable | <i>Susto</i> (n=51) | Control (n=51) |
|----------------------|---------------------|----------------|
| Age | 40 | 35 |
| Years of Education | 5 | 8 |

P=.10

The demographic variables of age and level of education were tested using the Mann-Whitney U test. There were no significant differences between the median ages of *asustados* (*susto* sufferers) and controls (Mann-Whitney U test $p=.10$) nor between the median years of education for *asustados* and controls (Mann-Whitney U test $p=.186$) (see table 6.7).

Independent Variables

Table 6.8: Descriptive Statistics for the Independent Variables of Cultural Consonance in Social Role Expectations and Historical Trauma for *Susto* and Control Participants of the Callejón de Huaylas

| Descriptive Statistics | Cultural Consonance in Social Role Expectations | Historical Trauma |
|------------------------|---|-------------------|
| N | 102 | 102 |
| Mean | 11.3 | 3.5 |
| Median | 11.0 | 3.0 |
| Mode | 13.0 | 2.0 |
| Standard Deviation | 2.9 | 2.4 |
| Range | 20.0 | 10.0 |
| Minimum | 4.0 | 0 |
| Maximum | 24.0 | 10.0 |

For cultural consonance, the mean (see table 6.8) Cultural Consonance in Social Role Expectations score was 11.3, the median was 11.0, and the mode was 13.0. The standard deviation of Cultural Consonance in Social Role Expectations Scale was 2.9 with a range of 20.0. The minimum Cultural Consonance in Social Role Expectations Scale score was 4.0, and the maximum was 24.0. The histogram of Cultural Consonance in Social Role Expectations Scale (see figure 6.1) shows approximate normal distribution with the majority of Cultural Consonance in Social Role Expectations Scale scores being between 7 and 17.

Regarding historical trauma, the mean (see table 6.8) Historical Trauma Questionnaire score was 3.5, with the median and the mode being 3.0 and 2.0 respectively. The standard deviation of the Historical Trauma Questionnaire was 2.4. The variable had a range of 10.0 with

the minimum being 0 and the maximum being 10.0. The histogram of Historical Trauma Questionnaire scores (see figure 7.2) showed that this variable is fairly normally distributed with the majority of individuals having a score between 0 and 4 .

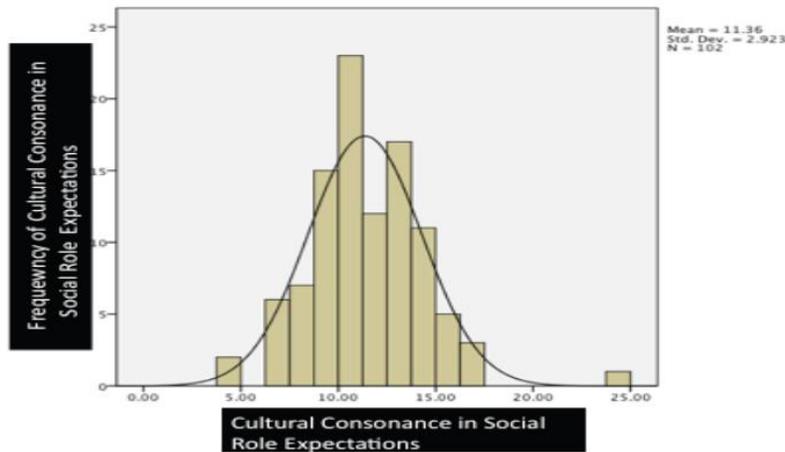


Figure 6.1: Histogram of Cultural Consonance in Social Role Expectations Scale of *Susto* and Control Participants of the Callejón de Huaylas

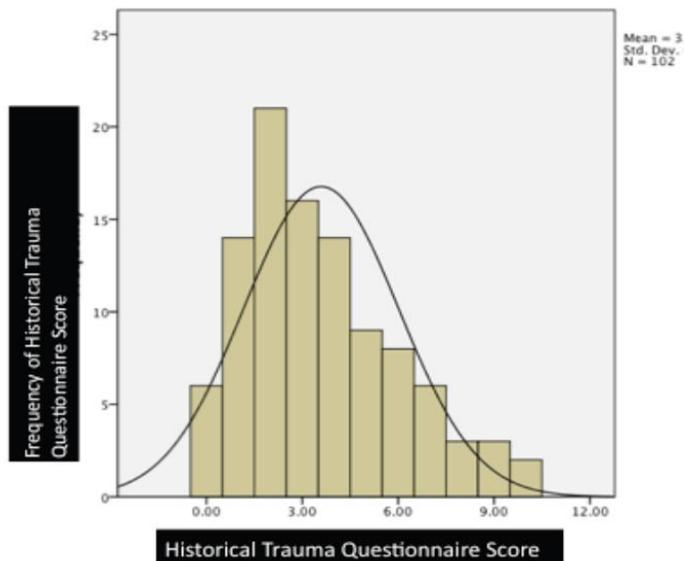


Figure 6.2: Histogram of Historical Trauma Scores between *Susto* and Control Participants of the Callejón de Huaylas Valley

Dependent Variables

In addition to the scales I had developed using cultural domain analysis, I also used Cohen Perceived Stress Scale to assess individual levels of mental well-being. I administered the Cohen Perceived Stress Scale (Cronbach's alpha = .64) to 102 informants. The maximum score one can receive on the stress scale is 64, with a sample mean score of 28.6 and a mental well-being mode of 30.0.

The *Susto* Symptoms Scale scores (see figure 6.3) showed that this variable is not normally distributed with the majority of individuals having a score between 8 and 10 and 15 and 22. The Perceived Stress Scale scores (see figure 6.4) showed that this variable is normally distributed with the majority of individuals having a score between 15 and 42. The General Health Questionnaire scores (see figure 6.5) showed that this variable is normally distributed with the majority of individuals having a score between 12 and 30. These histograms help characterize the composition of individuals scores for the *Susto* Symptoms Scale, Perceived Stress Scale, and General Health Questionnaire.

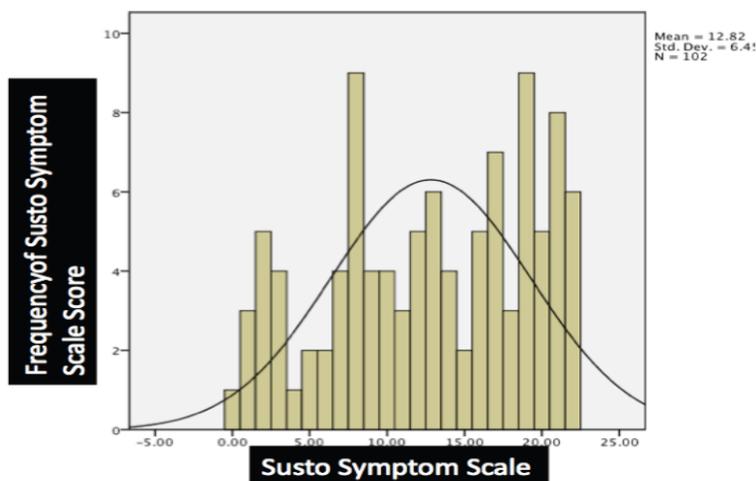


Figure 6.3: Histogram of *Susto* Symptoms Scale Scores between *Susto* and Control Participants of the Callejón de Huaylas

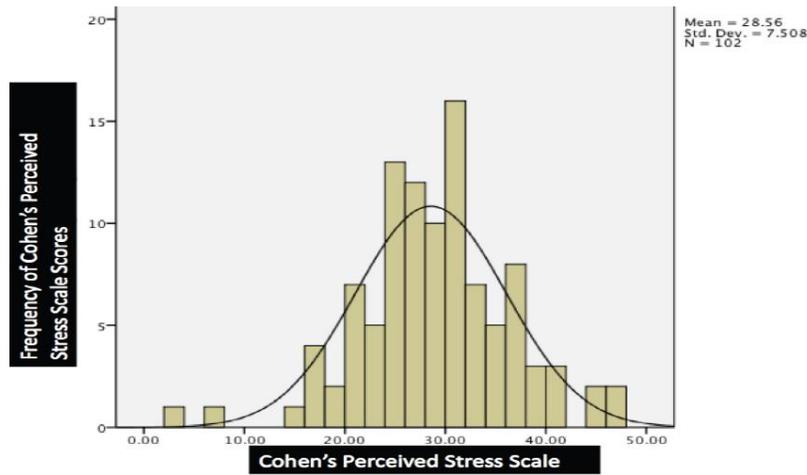


Figure 6.4: Histogram of Cohen Perceived Stress Scale between *Susto* and Control Participants of the Callejón de Huaylas

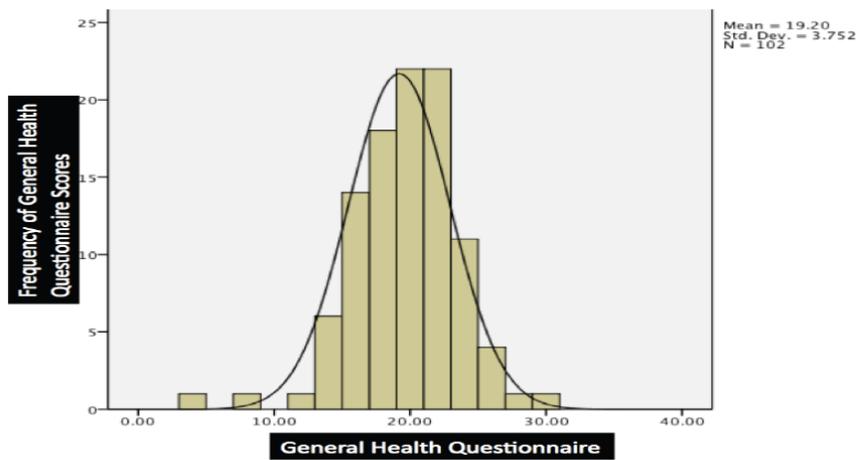


Figure 6.5: Histogram of General Health Questionnaire between *Susto* and Control Participants of the Callejón de Huaylas of Peru

Bivariate Associations

Bivariate testing was conducted on the data to gain an understanding of the relationships between pairs of variables. T-testing, Chi-Square, and Correlation tests were utilized for this phase of data analysis.

The average General Health Questionnaire score of *susto* sufferers was 20.5, which was slightly higher than the 17.9 score of non-*susto* sufferers ($p=.10$) (see table 6.9). For perceived stress, the score of *susto* sufferers was 31.0, which was higher than the 26.1 score of non-*susto* sufferers ($p=.10$) (see table 6.9). When a t-test was conducted the average symptom score of *susto* sufferers was 17.1, which was both significantly and substantially higher than the 8.5 score of non-*susto* sufferers ($p=.01$) (see table 6.9). Figure 7.6 below compares cases and control mean scores on the General Health Questionnaire, Perceived Stress Scale, and the *Susto* Symptoms Scale. The *Susto* Symptoms Scale shows the greatest difference between cases and controls suggesting that it is a better discriminator of cases than the other scales.

Table 6.9: Comparing Cases and Controls Mean Scores on the General Health Questionnaire, Cohen Perceived Stress Scale, and the *Susto* Symptoms Scale

| Independent Variable | <i>Susto</i> | Non- <i>Susto</i> | p value |
|------------------------------|--------------|-------------------|---------|
| General Health Questionnaire | 20.5 | 17.9 | .10 |
| Cohen Perceived Stress Scale | 31.0 | 26.1 | .10 |
| <i>Susto</i> Symptoms Scale | 17.1 | 8.5 | .01 |

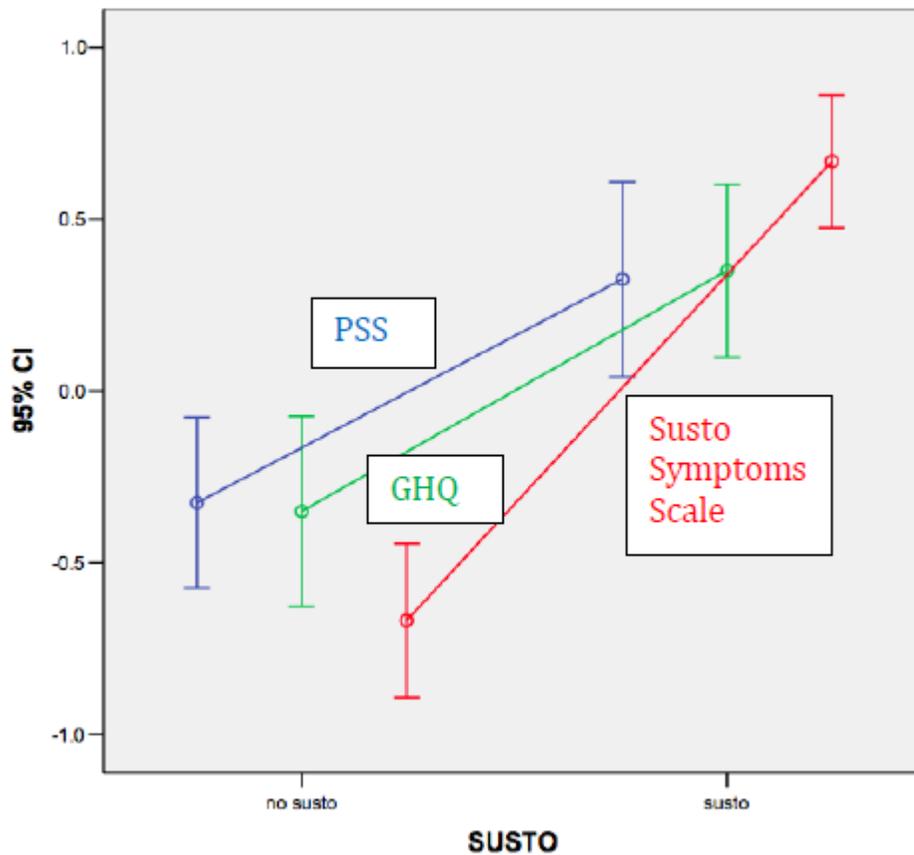


Figure 6.6: Comparing Cases and Controls Mean Scores on the General Health Questionnaire, Cohen Perceived Stress Scale, and the *Susto* Symptom's Scale

When a t-test (see table 6.10) was conducted comparing case and control mean scores for cultural consonance the means for cultural consonance were similar (see figure 6.7). However, when another t-test was conducted analyzing the means of case and controls scores for historical trauma the mean scores were different with *susto* cases reporting substantially higher levels of historical trauma.

Table 6.10: T-tests Comparing Cases and Controls Mean Scores for Cultural Consonance and Historical Trauma

| Covariates | <i>Susto</i> | Non- <i>Susto</i> | p value |
|---------------------|--------------|-------------------|---------|
| Cultural Consonance | 11.34 | 11.38 | .10 |
| Historical Trauma | 4.25 | 2.92 | .01 |

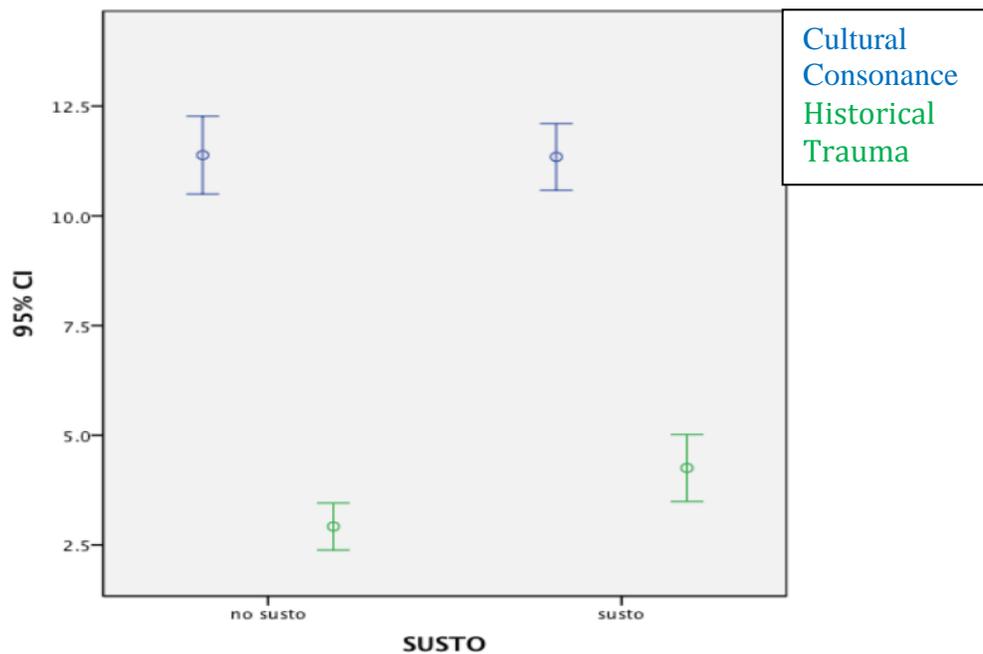


Figure 6.7: Comparing Cases and Controls Mean Scores on Cultural Consonance in Social Role Expectations Scale and Historical Trauma Scale

Table 6.11: Correlation Matrix of *Susto* Symptoms Scale, General Health Questionnaire, Cohen Perceived Stress Scale, Cultural Consonance in Social Role Expectations Scale, and Historical Trauma Scale

| Variable | <i>Susto</i> Symptoms Scale | General Health Questionnaire | Cohen Perceived Stress Scale | Cultural Consonance in Social Role Expectations Scale | |
|---|-----------------------------|------------------------------|------------------------------|---|--|
| <i>Susto</i> Symptoms Scale | | | | | |
| General Health Questionnaire | .435* | | | | |
| Cohen Perceived Stress Scale | .515* | .433* | | | |
| Cultural Consonance in Social Role Expectations Scale | -.170 | -.369* | -.252* | | |
| Historical Trauma Scale | .395* | .258* | .279* | -.023 | |

*Significance .01

In addition to tests of mean differences, which helped identify cultural consonance and historical trauma as potential risk factors for *susto*, correlations were calculated to help clarify the relationships between the 5 different scales that were used in the regression analysis (see table 6.11). The *Susto* Symptoms Scale is correlated with the General Health Questionnaire, Perceived Stress Scale, and Historical Trauma. The General Health Questionnaire, *Susto* Symptoms Scale, Perceived Stress Scale, Cultural Consonance in Social Role Expectations Scale, and Historical Trauma Scale are correlated. The Perceived Stress Scale is correlated with *Susto* Symptoms Scale, General Health Questionnaire, Cultural Consonance in Social Role Expectations Scale, and Historical Trauma. Cultural Consonance in Social Role Expectations Scale is correlated with General Health, Perceived Stress Scale, and Historical Trauma. The Historical Trauma Questionnaire is correlated with the *Susto* Symptoms Scale, General Health Questionnaire, and Perceived Stress Scale. These tests highlight the complex multivariate relationships between *susto* and the risk factors of cultural consonance and historical trauma. Regression analyses were needed to further understand the impact of cultural consonance and historical trauma on *susto*.

Multivariate Models

Logistic and linear regression models were employed to gain additional insight into the relationships between variables. The association of cultural consonance and historical trauma to *susto* status was examined using logistic regression analysis. Linear regression analysis was used to understand how cultural consonance and historical trauma related to the *Susto* Symptoms Scale, Perceived Stress Scale, and General Health Questionnaire.

Regression Analysis of *Susto* Status

Logistic regression analysis was used to examine the association of Cultural Consonance in Social Role Expectations, Historical Trauma, and *susto* status, net of the covariates of age, sex, and education. Logistic regression analysis is the preferred data analytic tool here, given that the outcome variable is a dichotomy. All continuous variables were converted to z-scores so that the odds ratios generated by logistic regression could be interpreted as the likelihood of being a case of *susto* associated with a 1 standard deviation difference in the independent variable.

There was no direct effect of covariates or cultural consonance on *susto* status (see table 6.12). However, I had hypothesized that lower cultural consonance individuals would have been more likely to have had *susto*. I was not convinced that there was not a relationship between cultural consonance and *susto*, so more hypothesis testing was needed to understand the potential impact of cultural consonance on *susto*. For historical trauma, there was a direct effect of historical trauma on *susto* status. The onset of *susto* is associated with the accumulation of exposure to culturally defined traumatic events.

Table 6.12: Logistic Regression of *Susto* Status

| Independent Variable | Standardized Beta of Dependent Variable- <i>Susto</i> Status |
|----------------------|---|
| Sex | 1.019 |
| Education | .008 |
| Age | .141 |
| Historical Trauma | .634* |
| Cultural Consonance | .115 |

* $p < .01$

Regression Analysis of Susto Symptoms Scale

Multiple Regression Model 1

Linear regression analysis was used to determine if a relationship existed between the independent variables of cultural consonance and historical trauma and the dependent variable of *susto* symptoms (see table 6.13). It was hypothesized that individuals with lower cultural consonance and higher historical trauma scores would have higher scores on the *Susto* Symptoms Scale.

Table 6.13: Linear Regression of *Susto* Symptoms Scale

| Independent Variable | Standardized Beta of Dependent Variable- <i>Susto</i> Symptoms Scale |
|---------------------------|---|
| Age | .122 |
| Sex | .110 |
| Education | .007 |
| Historical Trauma | .355* |
| Cultural Consonance | -.072 |
| Age x Cultural Consonance | .255* |

* $p < .01$

There was no direct effect of cultural consonance on *susto* symptoms; however, I identified an interaction effect between age and cultural consonance. My hypothesis was that age moderates the effect of cultural consonance on the *Susto* Symptoms Scale. This hypothesis will be discussed in more detail in multiple regression model 2.

Historical trauma, another risk factor associated with *susto*, and its relationship with the *Susto* Symptom Scale was analyzed using linear regression analysis (see table 6.13). I was interested in how historical trauma might be associated with *susto* symptoms while controlling for sex, education, and age. Cultural consonance and historical trauma are both risk factors for developing *susto*. More specifically, low cultural consonance and high historical trauma are associated with individuals who suffer from *susto*. There was a direct effect of historical trauma

on *susto* symptoms. My hypothesis was the higher the level of historical trauma individuals have faced the more *susto* symptoms they will have experienced. The onset of *susto* is associated with a traumatic event, so an individual who has experienced more traumatic events has an increased risk of developing *susto*. For *susto* cases, as historical trauma increases, so does the frequency of *susto* symptoms (see figure 6.8). For non-*susto* cases, as historical trauma increases, reported *susto* symptoms increase but at a much lower rate when compared with *susto* sufferers.

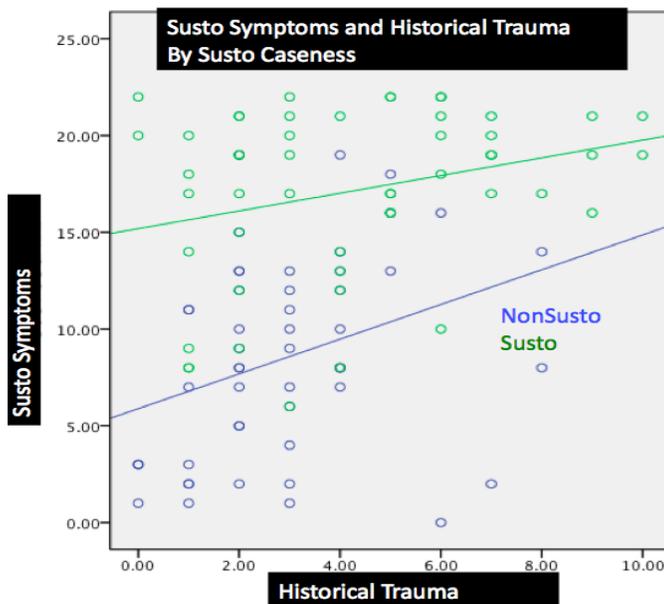


Figure 6.8: Linear Regression of Historical Trauma and *Susto* Symptoms

Multiple Regression Model 2

An additional multivariate model was created to better understand the effect of age on cultural consonance. There was no direct effect of cultural consonance on *susto* symptoms; however, I identified an interaction effect between age and cultural consonance (see table 6.14). There was no direct effect of age on *susto* symptoms, but when age is categorized looking at individuals under the age of 40, differences emerge between individual *susto* symptom scores.

My hypothesis was that age moderates the effect of cultural consonance on the *Susto* Symptoms Scale. Figure 6.9 shows that for persons under and over the age of 40, as cultural consonance increases, reported *susto* symptoms decrease. For persons 40 and older, there is no association of cultural consonance and *susto* symptoms. It is worth noting, too, that this interaction effect remains significant when *susto* status is controlled.

Table 6.14: Linear Regression of *Susto* Symptoms Scale Focusing on Interaction Effect of Age and Cultural Consonance

| Independent Variable | Standardized Beta of Dependent Variable- <i>Susto</i> Symptoms Scale |
|---------------------------|--|
| Sex | .089 |
| Education | .005 |
| Age Categorized | .076 |
| Historical Trauma | .363* |
| Cultural Consonance | -.316* |
| Age x Cultural Consonance | .261* |

* $p < .01$

Susto symptoms and cultural consonance by age group

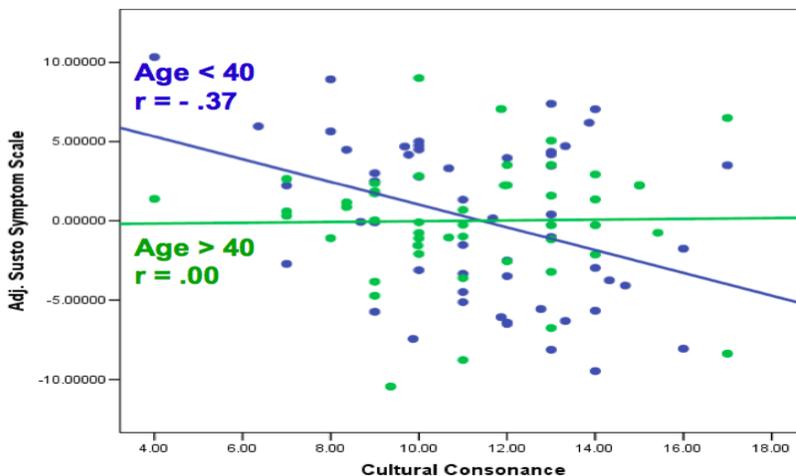


Figure 6.9: Linear Regression of *Susto* Symptoms Scale Focusing on Interaction Effect of Age and Cultural Consonance

Regression Analysis of Perceived Stress Scale

Linear regression analysis was used to examine the relationship between consonance as it relates to the Cohen Perceived Stress Scale. It allows for the examination of more complex relationships among variables. I was interested in how cultural consonance might be associated with mental well-being while controlling for sex, education, and age. I also controlled for another stressor variable: historical trauma.

There was a direct effect of cultural consonance on perceived stress (see table 6.15). The relationship seems to be that as cultural consonance increases there is a decrease in perceived stress scores. The decrease in perceived stress scores seems to be consistent in both age groups (see figure 6.10).

Table 6.15: Linear Regression of Cohen Perceived Stress Scale

| Independent Variable | Standardized Beta of Dependent Variable- Cohen Perceived Stress Scale |
|---------------------------|--|
| Sex | .091 |
| Education | .021 |
| Age Categorized | .002 |
| Historical Trauma | .287* |
| Cultural Consonance | -.339* |
| Age x Cultural Consonance | .148 |

*p< .01

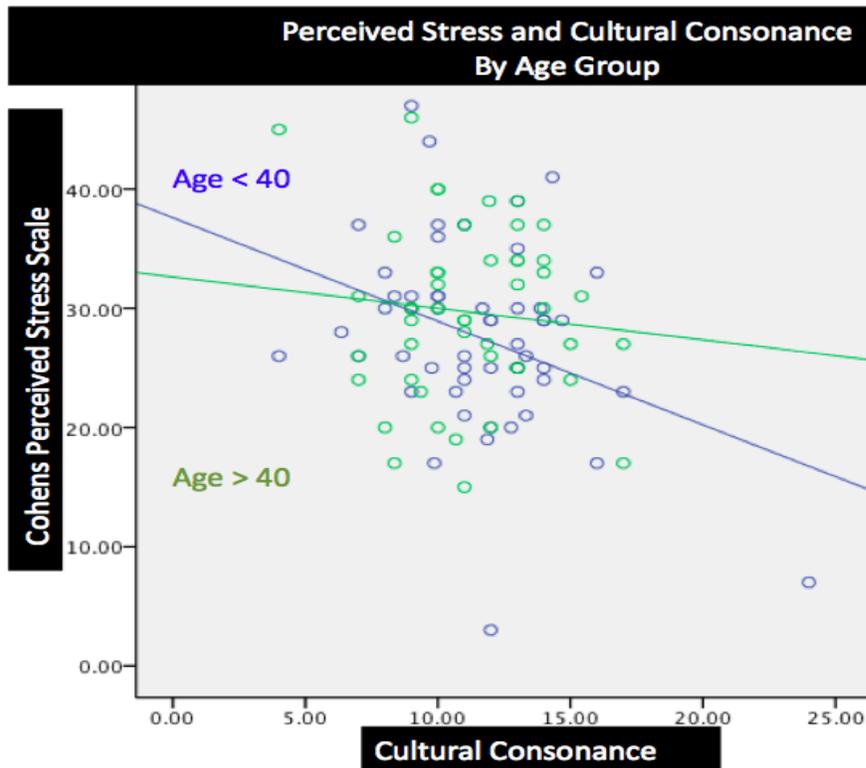


Figure 6.10: Linear Regression of Perceived Stress Scale Focusing on Age

There was a direct effect of historical trauma on perceived stress. My hypothesis was individuals that have faced higher levels of historical trauma are more susceptible to perceived stress. The onset of *susto* is associated with a traumatic event so an individual who has experienced more traumatic events has an increased risk for developing *susto*. For *susto* cases, as historical trauma increases perceived stress increases (see figure 6.11). For non-*susto* cases, as historical trauma increases, reported perceived stress increases but at a lower rate when compared with *susto* sufferers.

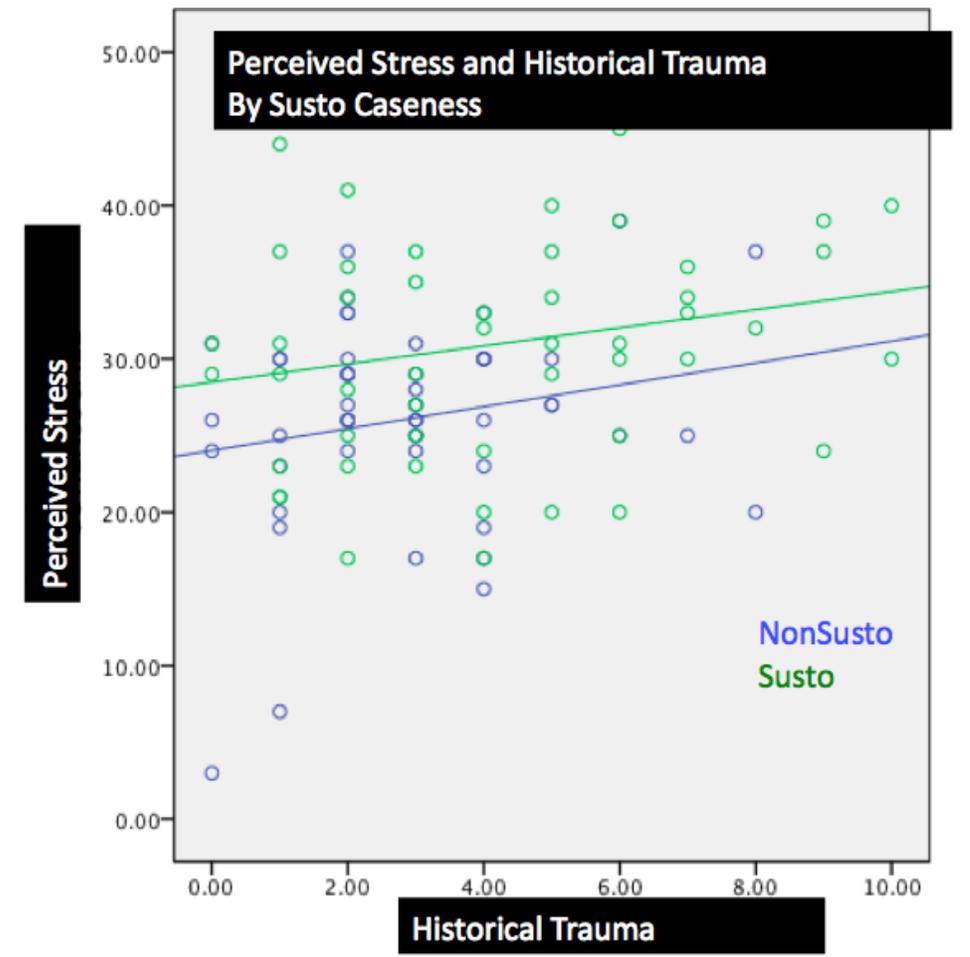


Figure 6.11: Linear regression of Perceived Stress Scale Focusing on Historical Trauma
Regression Analysis of General Health Questionnaire

Linear regression analysis was also utilized to examine the relationship between consonance and the General Health Questionnaire. I was interested in how cultural consonance might be associated with physical well-being while controlling for sex, education, and age. I also controlled for another stress variable: historical trauma.

There was a direct effect of cultural consonance on general well-being (see table 6.16). Individuals with higher cultural consonance have greater General Health Questionnaire scores.

There seems to be a relationship between greater physical well-being and higher cultural consonance.

Table 6.16: Linear Regression of General Health Questionnaire

| Independent Variable | Standardized Beta of Dependent Variable- General Health Questionnaire |
|---------------------------|--|
| Sex | -.014 |
| Education | -.318* |
| Age Categorized | .164 |
| Historical Trauma | .069 |
| Cultural Consonance | -.356* |
| Age x Cultural Consonance | .175 |

*p < .01

There was no direct effect of historical trauma on general health (see table 6.16). My hypothesis was individuals that have faced higher levels of historical trauma have a decreased physical well-being. The onset of *susto* is associated with a traumatic event, so an individual who has experienced more traumatic events has an increased risk of developing *susto*. For *susto* cases, as historical trauma increases general well-being remains the same. *Susto* sufferers are all generally less physically healthy when compared with non-*susto* cases. For non-*susto* cases, as historical trauma increases, reported physical well-being declines as individuals report more symptoms of nonphysical wellness.

Data Analysis Conclusions

This research identified that low cultural consonance and high levels of exposure to historical trauma are risk factors for *susto*. Younger individuals with low cultural consonance are at greater risk for developing *susto*. Andeans who are under the age of 40 and have lower cultural consonance report having experienced greater numbers of *susto* symptoms. For highlanders 40 and older, there was no association of cultural consonance and *susto* symptoms. These findings suggest that older individuals know the model of *susto* better and use this model

to understand their current living conditions. For younger Andeans the cultural model of *susto* seems less important. Individuals with low cultural consonance also report higher levels of perceived stress and lower physical well-being. These findings are in agreement with earlier findings by Rubel et al. (1984) where *susto* sufferers in Mexico were also found to have lower levels of physical well-being when compared with a control group of individuals from the same geographic area. Low cultural consonance seems to be a risk factor for developing *susto* for younger adults.

Historical trauma is another potential risk factor for the development of *susto* in the Andes. Highlanders that have experienced higher levels of historical trauma have a greater chance of developing *susto*. Furthermore, they report experiencing higher numbers of *susto* symptoms. Individuals with greater exposure to historical traumas also have experienced somewhat higher levels of perceived stress; however, historical trauma was not associated with lower general well-being. This particular finding suggests that the harsh conditions of the Andean lifestyle create the increased possibility for individuals, regardless of suffering from *susto* or not, to experience decreased physical well-being. The research here demonstrates the complex cultural understanding of illness. *Susto* is a culturally acceptable way of dealing with both the physical and mental stresses of being unable to fulfill one's culturally defined social role, while simultaneously experiencing multiple historically traumatic events. The findings here support the notion of cultural syndromes as localized idioms of distress that individuals embody as representations of complex relationships between historical traumas and stress created by current living conditions (Pedersen et al. 2010).

Chapter 7: Case Studies of the Andean Highlanders of the Callejón de Huaylas

The highlanders of the Andes Mountains are predominantly agriculturalists who specialize in the production of a varietal array of native tubers. In order to provide the reader with a closer look at the unique lives of some of the participants in the study, this chapter details four case studies. Each is a snapshot of an Andean farmer's life and his or her relationship to *susto* and cultural consonance. The four selected participants' ages range from 40 and younger to 41 and older. These participants (pseudonyms were used to protect confidentiality) include: a young individual with a low *susto* symptom score (which will be contrasted with a farmer of similar age, with a high *susto* symptom score) and an older highlander with a low *susto* symptom score (to be compared to an older individual with a high *susto* symptom score).

These highlanders farm steep mountainsides using a team of bulls and a non-mechanical plow, relying solely on the physical labor of humans and animals. Neighbors and families depend upon each other to make their farms function, helping one another during planting and harvesting. Men and women must work together as a unit to subsist in the harsh mountainous terrain. Families tend to be quite large, as many sons and daughters are helpful in the tending of the crops. These four criteria are representative of the characteristics of the farming community members discussed herein.

Case 1: Younger With Low *Susto* Symptoms Score

Claudio is a 34-year old male living in Marcac, a hamlet built in a low-lying area surrounded by eucalyptus trees. He has lived there his whole life and works as a taxi driver. Claudio's *susto* began after his taxicab rolled over during a wreck. He actively farms his one hectare of land (2.5 acres) by planting various types of maize, including *choclo*, squashes like *zapallo* and *calabaza*, potatoes, wheat, *habas* and *oca*. Claudio's large family includes four children and a wife. Given that farming is part of his heritage, he owns many of the tools required for adequate cultivation, including his own team of bulls. The *yunta* is one of the most important tools for farmers in the Andes. However, he also uses the animals as another source of income by renting the team to his neighbors. Like most people in his community, Claudio uses the *lampa* and *queshe* in crop cultivation, especially that of potatoes.

In discussion of his role as an Andean highlander, Claudio outlined his daily activities, such as helping neighbors plant and harvest in their fields. "*Sí, siembro cada año y mi esposa cocina y lava la ropa cada semana*". (Yes, I plant every year, and my wife cooks and washes clothes every week). Claudio's low *susto* symptoms score is partially explained by his ability to earn income to support his wife and children: through access to various farming tools, a taxicab to drive and ownership of bulls for self-use as well as lease to neighbors. When asked to agree with the statement "*A veces mi hogar no es tan bien mantenido como me gustaría*" (Sometimes my home is not supported as well as I would like) he responded "*definitivamente no es cierto, mantengo bien mi hogar*" (definitely this is not true, I take good care of my home). This is an example of a farmer who is reasonably successful, living within his means. For example: "*A veces mis vecinos me dejan sembrar en su terreno. Cultivo más papas y maíz*" (Sometimes my neighbors let me plant on their land. I cultivate more potatoes and maize). Good community

relations give Claudio additional support. Being allowed to plant crops on neighbors' land provides the family with a more fruitful harvest though there are costs associated with using another farmers land.

Claudio's case demonstrates the relationship between cultural consonance and *susto* symptom scores. He has high cultural consonance in Andean social roles but a low score on the *susto* symptoms scale. Having youth and living in a town that is relatively close to Huaraz, Ancash's capital gives Claudio more access to social interaction. Additionally, both primary and secondary education is available in Marcac; Claudio has completed 11 years of public education, high for the sample. Even though this participant has experienced *susto*, his level of education, exposure to a more populated environment and his occupation as a taxi driver give him a different model for understanding the social stress he experiences. Having been introduced to more than one notion of illness, he labels his stress as nervousness. He says "*cuando tengo estrés puedo accidentarme por el nerviosismo* (when I have stress I can have an accident because of nervousness). Driving his taxi in Huaraz places him in direct contact with not only other rural Andeans, but also with urban, more educated Peruvians from various parts of the country and a myriad of international tourists. These factors create a social experience that is quite distinct from that which less urbanized highlanders might encounter in Marcac.

Case 2: Older With Low *Susto* Symptoms Score

Only a few older informants had low *susto* symptoms scores. Javier is a 56-year old male living in Paria and has only resided there for ten years. Paria is an intermediary hamlet between more remote villages and Huaraz. The primary occupation of Javier and many others in Paria is farming, but he only owns .25 hectares of land (less than 1 acre). Although he lives in the Andes, he has not experienced *susto*. He actively cultivates vegetables such as potatoes, maize,

wheat, lima beans, and *oca*. While Javier does own the tools that he needs for occupation, he is unable to own the animals required. He rents a team of bulls for plowing. The *lampa* and *queshe* are an integral part of the tool collection his family uses for planting and harvesting.

With respect to his social role, Javier describes his work in the community: “*Ayudo cosechar a los vecinos con frecuencia*” (I help my neighbors harvest frequently). Since active community participation is important to him, he helps his neighbors in their fields. To explain how he deals with the lack of farmland required for cultivation he says: “*A veces mis vecinos me dejan sembrar en su terreno*” (Sometimes my neighbors let me plant on their land). Without the use of this additional land, he would not be able to plant a sufficient amount of crops -- such as the potatoes and maize that are the staples of his family’s consumption -- to support his market income.

Javier also participates in the domestic work of his household, doing chores such as cooking and washing laundry for his family, at difficult times when he cannot find enough work: “*A veces no trabajo mucho*” (Sometimes I do not work much). Of course, it is difficult for Javier to provide for his family if he lacks work: “*A veces no les atiende bien a mis hijos*” (Sometimes I do not take care of my children well”). In order to generate income for his family, he depends on harvesting a good crop to be able to sell at the market.

Javier’s case is intriguing because he has low cultural consonance and a low score on the *Susto* Symptoms Scale. Javier is an example of the older participants in the sample whose cultural consonance seems to have no effect on *susto* symptoms. Given that the majority of older Andeans seem to know the model for *susto* well, whether they use it or not, those few like Javier who do not know the model must use some other model to describe their social role stress. Since Javier has not experienced the illness of *susto* this is probably related to his low score on *susto*

symptoms. If cultural consonance level does not affect the *susto* symptoms of older Andeans, other factors must be at work to explain why they adhere to a particular cultural model for *susto*. One possible explanation for this phenomenon could be that older Andeans have had more time to accumulate physical problems from injuries associated with living in the harsh highland climate. Either they choose to associate their physical symptoms with *susto* or they understand their maladies as the result of growing older.

Case 3: Younger With High *Susto* Symptoms Score

The combination of youth and a high *susto* symptom score was more common among the participants in the study. Delfina's case is an instructive example of this type of informants. This 34-year-old woman has lived in the remote highland hamlet of Llupa her entire life. In this small community that spreads out over a large area of land, Delfina controls none of it and earns an income as a domestic worker in Huaraz. Her small family consists of a husband and 2 children. *Susto* is an illness that Delfina has dealt with multiple times. When speaking about the causes of *susto* she relates: "*Me asusté cuando los perros ladraban en la noche y alguien me sorprendió en la cocina*" (I got scared when dogs were barking at night and someone sneaked up on me in the kitchen). After having experienced a sudden fright brought on by the surprise of dogs barking at her while she was walking at night and also when someone startled her in the kitchen, Delfina began having *susto* symptoms. She began to be unable to sleep and to jump in the night. As a result of her economic situation, Delfina is unable to grow crops of any kind and does not own any agricultural animals. She actively helps members of her community with planting and harvesting. However, unlike the experience of some highlanders in the sample, Delfina's generosity is not returned with planting rights since her neighbors do not allow her to grow crops on their land.

Delfina associated cooking and washing clothes for her family with her social role: “*Cocino cada día y lavo la ropa*” (I cook every day and wash the clothes). Educating her children is challenging because she often does not have the necessary financial resources to pay for school-related needs. Domestic violence is also an issue for Delfina. She describes the household disputes: “*hay veces cuando mi esposo me pega*” (Sometimes my husband hits me). Delfina’s situation is representative of some of the most common domestic problems mentioned by both male and female informants. Difficulty sending their children to school and domestic violence were frequently mentioned themes. Many times the violence occurs in conjunction with excessive alcohol consumption.

Delfina’s categorization as having a high *susto* symptom score is due to her low cultural consonance. Her lack of ability to enact the culturally agreed-upon model of Andean social roles -- due to her financial and familial situation – results in her having low cultural consonance. Delfina knows the model for *susto* and employs it fully to explain the social stresses that she experiences. She described how her husband was a source of stress in her life, “*mi esposo toma mucho y es mujeriego. No se preocupa por sus hijos*” (my husband drinks a lot and is a womanizer. He shows no concern for his children). As she described, when someone has *susto* “*no puede dormir, salta en la cama, sueña horribles cosas, enfermizos*” (they cannot sleep, they jump in the bed, they dream horrible things, they are sickly). Not being culturally consonant causes social stress to be a frequent problem in her life. Despite her 12 years of education, which is high for the sample, Delfina’s life in the remote highland community of Llupa is especially difficult. Living far away from Huaraz is stressful because she has to travel further which takes more time out of her busy day and costs money because of transportation to work. She works for a wealthy family in Huaraz who view her as lower class and not as an equal. Delfina has low

cultural consonance; therefore, she seeks a cultural model to help explain why her life is so stressful. It seems that for her, and for many other Andeans in the Callejón de Huaylas, *susto* provides this model.

Case 4: Older With High *Susto* Symptoms Score

Justina is one of the many older informants in the sample with high *susto* symptoms scores. She is a 62-year-old woman living in Huaraz who works as a farmer and a housewife. She has suffered from *susto*. Like many people living in the capital of Ancash, she migrated to this economic nucleus ten years ago from a more remote area of the valley in search of a better life. The land that she owns for farming is .25 hectares (less than 1 acre). For household consumption, her family plants potatoes, maize, wheat, lima beans, and *oca*. Justina describes where she cultivates her crops: “*mi chacra está más alta, cerca de Jahua*” (my land is at a higher elevation, near Jahua). Like many individuals who live in Huaraz, Justina has cultivatable land on the outskirts of the city at a higher elevation. One difficulty that she faces is the need to rent the animals for planting since she has no place to house them in the city. Additionally, her family does not own many of the tools needed for agriculture work. One factor that works in Justina’s favor is her heavy involvement in assisting other members of her community with harvesting their crops for payment or return assistance.

In her view, Justina’s social role includes working in the store that she runs out of her home and doing other domestic chores such as cooking. In her words: “*Trabajo en mi tiendecita y cocino para mi familia*” (I work in my tiny store and cook for my family). At times when there is not enough work for her, the family suffers financial hardship: “*A veces mi hogar no es tan bien mantenido como me gustaría*” (Sometimes my home is not as well supported as I would like). Another problem resulting from her financial instability is the incapacity to provide

adequate nutrition for her children. Often, these children are only able to eat two meals per day and when resources are especially scarce, Justina compensates by not eating. Lack of sufficient funds also creates an obstacle for Justina where the education of the children is concerned.

The fact that she has actually experienced the illness helps to explain why Justina has a high *susto* symptom score despite her more advanced age. Justina developed *susto* after she sustained an injury to her arm caused by a car wreck. She has high cultural consonance and knows the cultural model of *susto* as well as that of what it means to be Andean. The numerous social stressors affecting Justina's life make it understandable that she also enacts the cultural model of *susto* because it gives her a culturally acceptable way to deal with the physiological impacts of the stress.

First, the passing away of her husband brought on the new stress of being the sole breadwinner for herself and for her family. She uses the model of *susto* to explain the various symptoms she has experienced. Justina says when she has *susto* "*me duele la cabeza, no puedo dormir de noche, no quiero comer, me desespero y lloro*" (my head hurts, I cannot sleep at night, I do not want to eat, I feel despair, and I cry). Her lack of education, only 2 years, and being from a more remote area suggest that she may interpret her stress differently than someone from a more urban area of the Andes where there are other types of stressors. She knows the cultural model of *susto* well and chooses to employ it explain her illness. Justina demonstrates the lack of buffering effect that her high cultural consonance has on *susto* symptoms in older highlanders. She knows the cultural model of being Andean and enacts it in her life, but still suffers from high stress levels because of the loss of her husband. This combination of factors probably contributed to her suffering from *susto*.

Discussion

The research in this study suggests that for older Andeans there is no relationship between cultural consonance and *susto* symptoms. Therefore, it seems that differences in cultural consonance are most important for younger highlanders. Culture consonance, which will be discussed at length in other chapters, is the degree to which individuals can approximate in their own lives the shared cultural models of a particular domain (Dressler 2005). As a result of this research, it can be deduced that although both younger and older Andeans are experiencing *susto* symptoms, their shared understandings of these symptoms may be different. Social stress, which was measured as cultural consonance, impacts Andeans of all ages but only younger individuals seem to exhibit a connection between their social stress and the experience of *susto*.

Younger Andeans are more likely to have low *susto* symptom scores because the cultural model of *susto* appears to be less important to highlanders living in more urban areas with higher levels of education. Claudio is an example of the participants who, being high in cultural consonance, know the models of social roles and are able to enact these models in their daily lives, resulting in less extreme levels of social stress. Due to their lower levels of social stress, they do not feel the need to look for alternate models to explain specific types of negative social conditions. In contrast to these high cultural consonance individuals, younger highlanders, such as Delfina, have a high *susto* symptoms score and employ the model of *susto* in their daily lives. Delfina exemplifies low cultural consonance and the experience of severe social stress due to the lower social position that she holds in her remote highland hamlet. She lacks land and has difficulty being able to farm. Individuals who cannot fulfill their social roles as farmers often suffer from the illness of *susto*, and therefore utilize the symptoms of *susto* as a model of

explanation for their suffering. Among current generations, the cultural model of *susto* is becoming less common and is probably being replaced by a new model that is more relevant to the different social stressors experienced by this younger age group. This new model might be comprised of elements like wanting to have a college education or desiring new material status items like cellular telephones and televisions.

As this research demonstrates, older Andeans tend to have higher *susto* symptoms scores. Among this segment of the population, there does not appear to be a relationship between cultural consonance and *susto* symptoms scores. Javier's case study illustrates that older Andeans with low *susto* symptoms scores probably have not suffered from the illness. Even so, the older generations seem to have a keen understanding of the model for *susto* regardless of whether or not they use it. As an example of the lack of relationship between the two variables, Javier has low cultural consonance and a low *susto* symptoms score. He is experiencing social stress from low consonance but has not experienced many of the symptoms commonly associated with *susto*.

As individuals grow older in the harsh physical terrain and high altitude of the Andes, the likelihood that they will have incurred multiple frights and injuries increases. Older Andeans tend to have higher *susto* symptoms scores; many times brought about by the traumatic injuries they have suffered. The members of this generation with high cultural consonance still suffer from many of the symptoms of *susto*, as this cultural model seems to be more relevant to them than to younger highlanders. Justina's case study shows that having high cultural consonance when one is older does not reduce one's risk of having *susto* symptoms. She suffers from social stress because she is a widow living with the burden of raising her family with little support. To internalize her social stress, Justina employs the cultural model of *susto*.

This brief description of four case studies is designed to help clarify the cultural and social context of Andean living. Farming and maintaining strong neighbor relationships are major components of Andean social roles. There are many social obligations such as *compadre* relations and marriage bonds that tie individuals to each other. Taking care of one's family and supporting the household are also crucial to survival in the highlands. *Susto* can serve as a model to help highlanders understand the difficult social conditions of their environment, but just like many other regions of the world, the Andes are not immune to economic and cultural change. Many younger farmers are moving to the Peruvian capital of Lima in search of new jobs in factories and the opportunity to earn material wealth. The newly earned wealth can then be used to purchase televisions and other status items or mass-produced food from restaurants like McDonalds. While highland farmers undergo urbanization at rapid rates, *susto* is just one manifestation of the experience of this culture change. The results of the research presented in this dissertation, examined closer in the microcosm provided by these four case studies, suggest that *susto* may become less common in the future.

Chapter 8: Discussion and Conclusions

Introduction

The cultural syndrome of *susto* was selected as a tool to gain greater understanding of the cultural models Peruvian Andeans use to define illness. Furthermore, *susto* was chosen because of its high prevalence rate in many parts of Latin America, including Peru. Studying *susto* was helpful in identifying the complex risk factors associated with illness in the Andes. Influenced by epidemiological approaches to understanding *susto* pioneered by Arthur Rubel, who identified *susto* risk factors to be physical weakness and social stress which he defined as individual failure to meet culturally agreed upon social role expectations, I created a multiphase research design. It incorporated ethnographic research utilizing cultural domain analysis of models of *susto* and social roles in the Andes and case-control epidemiologic sampling using ethnographically derived research scales for cultural consonance in social role expectations, *susto* symptoms, and historical trauma.

Susto

Susto is a complex understanding of illness consisting of symptoms of physical weakness and bodily pain that follows a sudden frightening experience. The symptoms of *susto* in the Callejón de Huaylas can be classified into two groups based on cultural domain analysis: symptoms of general sickness and classic *susto* symptoms. There are three levels of *susto* severity. In its mildest form, sufferers generally suffer from

headpain and nausea. Intermediately, difficulty sleeping and loss of appetite can be experienced. In the most severe cases it is related to the separation of one's soul from the body as a result of a traumatic event (Rubel 1984). If untreated at this level, *susto* can lead to extreme debility and death. Highlanders discussed car accidents and being chased by animals as common causes of the onset of *susto* symptoms. Some the symptoms discussed in interviews were loss of appetite, jumping in the night, and feeling like you are being absorbed by the earth. The symptoms of *susto* in the Callejón de Huaylas can be classified into two groups based on cultural domain analysis: symptoms of general sickness and classic *susto* symptoms. Fright and soul loss, while associated with *susto* in the valley, are not the determining factor in *susto* diagnosis. It seems that the classic *susto* symptoms are most often associated with the worst level of *susto*. This finding suggests that symptoms that individuals are more likely to remember or know more about are ones associated with the most grave cases of *susto*. One can be “*asustado*” but not necessarily have all of the classic symptoms of *susto* such as soul loss.

Cultural Consonance

Cultural consonance is a theoretical tool for penetrating particularly sensitive areas of society, which allows individuals to indirectly generate ethnographic models of their daily lives and to discretely reveal their own level of cultural knowledge. Moreover, it is the level of difficulty experienced by individuals trying to live in accordance with shared cultural models (Dressler 2005). The theory of cultural consonance was employed to generate an ethnographic model of the cultural domain of Andean social roles. Identifying the components of this domain was vital in establishing what Andean society agrees should be associated with the Andean social role. As a result, a tool was created that could be compared with individual behavior to establish whether one is able to meet his or her social role obligations, meaning he or she is culturally

consonant. Andean informants identified a core set of ten components that comprise social roles in the Andes. These included activities such as maintaining one's household, planting crops every year, and taking care of one's spouse. The findings indicate that if an individual knows the cultural model of being Andean but is unable to enact the model in their daily life, stress is experienced and can lead to decreased mental and physical well-being.

Historical Trauma

Andean social roles in the Callejón de Huaylas were investigated in conjunction with research looking at historical traumas, which can be defined as culturally salient stressful events that have occurred in past in the valley and include natural disasters, disease epidemics, and political unrest. The Callejón de Huaylas has experienced many significant events. One of the most noteworthy was the avalanche and earthquake of 1970, which killed or displaced many Andeans in the valley. The actual event frightened many highlanders; however, the damage suffered from the natural disaster was far worse as many lost their homes and crops to the destruction of the earthquake. Other important events related to nature that informants reported were various floods caused by mining operations in the valley and a major freeze that occurred late in the growing season of 2008 damaging many crops. Health was another area that informants discussed, referencing the impact of the cholera epidemic of the 1990s. The cholera outbreak spread through the consumption of contaminated *ceviche*. The time of terrorism or time of Alan, terms highlanders use to classify the historical period of the 1980's, was described by Andeans as a period of death, kidnapping, destruction, and price inflation. The political unrest of the 1980s associated with the Shining Path movement was intensely stressful for Andeans: during this time Peruvians witnessed local political authorities being kidnapped, the destruction of homes and electrical infrastructure, people disappearing, prices of sugar and oil

rising rapidly, and people coming into the highland hamlets pretending to be members of the Shining Path and subsequently stealing money and livestock from farmers. These historical events were all derived from informant interviews in phases one, two, and three of the project. The interviews were employed to measure historical stress by determining individual levels of exposure to these events, which generated feelings of fright, and created circumstances that placed individuals under differing levels of duress. Since these are actual terrifying events that are associated with stress, they are an important part of risk factor assessment of *susto*.

The scales created from cultural domain analysis were used in the case-control phase of the research. The social role data were used to create the Cultural Consonance in Social Role Expectations Scale, the historical trauma information developed into the Historical Trauma Questionnaire, and the symptoms of *susto* formed the *Susto* Symptoms Scale. These three scales were combined with the General Health Questionnaire and Perceived Stress Scale to gather data on the risk factors for developing *susto*. The Cultural Consonance in Social Role Expectations Scale showed that low cultural consonance is a risk factor for *susto*. The Historical Trauma Questionnaire demonstrated that historical trauma is associated with *susto* and a high exposure levels to historical trauma is an additional risk factor. The *Susto* Symptoms Scale revealed that low cultural consonance and age together are indicators of *susto* symptoms. High levels of historical trauma correlate with high numbers of symptoms on the *susto* scale. The General Health Questionnaire and Perceived Stress scale showed that low cultural consonance is not an indicator of a poor general health or low mental well-being; however, historical trauma is a good indicator of poorer physical health and reduced mental well-being.

The research discussed here seeks to identify the risk factors for developing the illness of *susto*. It is an attempt at answering the question, Why does everyone in the Andes not suffer

from *susto*? Furthermore, it tries to determine what is different about an individual who suffers from *susto* when he or she is compared with other highlanders living in the same community.

The interaction of cultural consonance and age in relation to *susto* symptoms provides compelling evidence to suggest that cultural consonance is an important risk factor.

Cultural Syndromes

A superior definition of a cultural syndrome, which has been used as a focus of this research, is that it is a complex understanding of illness that is culturally specific and is commonly referred to as a folk illness (O’Neill and Rubel 1980; Oths 1999). A cultural syndrome encompasses the Andean cultural conceptualization of the strong interconnectedness of the mind and body. Understandings of cultural syndromes are formulated based on four competing notions of illness in medical anthropology: illness representations as folk beliefs, cognitive models, culturally constituted realities, and mystification. Illnesses are discussed as representations of folk beliefs about sickness and the causes of poor health. Cognitive models are employed to suggest that illnesses are representations of stressful events and conditions that individuals experience. Illnesses are argued as being culturally constituted realities and reflections of political and economic conditions. Mystification has also been suggested as an explanation for the existence and high prevalence rates of culturally constituted illnesses in different geographic regions (Good 1994). Illnesses like cultural syndromes may provide what Kleinman et al. (1997) have termed explanatory models. These models could be regarded as ways to deal with the process of mystification associated with having an illness that is challenging to comprehend. In their research on health, they found that individuals explain and internalize their current unhealthy condition through ‘explanatory models’. These models served as frameworks that helped with the process of internalizing illnesses that may be difficult to

understand. They become cognitive blueprints for how to deal with the levels of anxiety and uncertainty associated with having an illness. Other researchers including Glick (1967) and Spiro (1952) have demonstrated that being able to label a phenomenon is an important part of dealing with the realities imposed by the illness. Glick (1967) discusses how medicine is an ethnographic category that is important for the Gimi of New Guinea; it is an “explanatory model” that they use for interpreting the realities of their highland environment. Spiro (1952) describes how in the Ifaluk island people believed in ghosts even though those beliefs are detrimental to their health. People seek ways to understand the world around them and often times create elaborate cultural explanations for current social conditions. *Susto* can be understood as an “explanatory model,” used by Andeans as a framework for dealing with the anxiousness that is associated with being under tremendous amounts of stress from exposure to historically traumatic events and failure to meet social role expectations. However, it seems to only be utilized by those Andeans who have low cultural consonance and high social stress.

In the study of cultural syndromes, anthropologists have utilized four major theoretical approaches to gain greater understanding of the relationship between a complex concept like culture and cultural syndromes. More specifically, the theoretical approaches of psychoanalysis, interpretation, epidemiology, and biocultural medical anthropology have been used to create conclusions about what comprises these syndromes and what factors make an individual at greater risk for experiencing a cultural syndrome.

The biocultural approach in medical anthropology provided the theoretical basis for this research on *susto*. Furthermore this approach has been used in conjunction with the theory of cultural consonance to study the impact of stress on the body. The reaction of the body to stress can be measured in a variety of ways. One of the easiest ways to measure stress is to measure

rates of hypertension among different populations. Dressler (2005) has shown that a biomedical framework and cultural consonance are effective ways to measure the impact of stress in urban Brazil. Additionally, extensive research using cultural consonance conducted by Dressler et al. (1996, 2000) and was influential in the development of the theoretical approach I chose for studying *susto* in the Peruvian Andes. Low cultural consonance in multiple cultural domains has been shown to be a risk factor for the development of hypertension. Consequently, the identification of low cultural consonance as a potential risk factor for negative health outcomes served as the basis for my approach to determine if low cultural consonance would be a risk factor for the development of *susto*.

Cultural consonance was important when trying to assess the risk factors associated with *susto*; however, it was not the only factor that other research has shown is potentially involved in the likelihood that an individual will develop a cultural syndrome. Historical trauma has been identified as being particularly important in generating high levels of social stress in societies where there has been a tremendous amount of social unrest and political upheaval. The Peruvian Andes have been identified by Pedersen et al. (2008, 2010) as one of these particularly vulnerable areas due to its traumatic cultural history of major natural events such as the 1970 earthquake and the political unrest associated with the Shining Path movement. Pedersen et al. (2010) identified the idioms of distress of *llaki* and *ñakary* among Peruvian highlanders. This research shows that there are long-term health consequences when individuals are under extreme conditions of adversity in a society such as Peru where social inequality is commonly present. Highlanders use *ñakary*, suffering, and *llaki*, sorrow and sadness, as socially constructed culturally acceptable ways to express the impact of historical trauma and social marginality. What Pedersen et al. (2010) demonstrate is not unlike what cultural syndromes like *susto*

become: they have been shown by Oths (1999) and Brooks (2007) to also be culturally acceptable ways to express the social stress and marginality associated with being a Peruvian Andean highlander. Therefore, historical trauma must be an integral part of any study investigating the risk factors associated with cultural syndromes like *susto*. Historical trauma was found to be an important risk factor for *susto*. The stressors identified as part of the history of the valley seem to be contributing factors to overall social stress levels that Andean highlanders experience.

Andean Ethnography

When studying the ethnography of the Andes one must consider the presence of different cultural perspectives on sickness and health. *Susto* and other cultural syndromes are common in the Andes, reflecting in part the highlanders' cultural belief system of how humans are an integral part of the natural cycles of the earth. Social roles are important in Peru; males and females must work together to survive the challenges of living in the harsh Andean highlands. Similarly, planting and harvesting crops is an important part of the Andean social role; men will often times be specialists in plowing using the *yunta* while females generally place fertilizer and seeds in the ground. In addition to participating in farming practices, taking care of one's spouse and family are important parts of the Andean social role. Being a good neighbor is also essential since culturally highlanders participate in reciprocal work exchange systems where neighbors help each other with the planting and harvesting of crops. The culture of the Andes is vibrant in the highlanders living in the Callejón de Huaylas.

The Callejón de Huaylas is a remote area high in the Andes Mountains where there are still many farming communities in which the practice of growing crops is the main occupation. There are two main groups of crops that are heavily cultivated in the valley: varieties of potatoes

and maize. The tuber grows well in the high mountain fields; the *papa blanco* and *papa amarillo* grow well in the lower ecological zones of the valley while *mashua* and *oca* prefer the higher altitude hillsides. Many different varieties of maize are also cultivated including white varieties for *choclo* and red and brown varieties for *cancha*. The preservation of agricultural heritage of the valley makes this an ideal setting for studying Andean social roles and *susto*. Traditional farming techniques are still used in the area with the *yunta* being the primary plowing method and animal manure the main fertilizer.

Supporting one's spouse is emphasized in that both males and females regard supporting one's partner as essential to maintaining the Andean household; both members of the partnership have to contribute to the household through household chores, earning income, and caring for children. Many communities in the Callejón de Huaylas still abide by reciprocal work relationships in which neighbors are called to the aid of a farmer when crops need to be planted harvested. The communities with their strong agricultural heritage and social roles that are representative of the Andean culture, make it the ideal setting for studying the relationships between cultural consonance and historical trauma with *susto*.

Importance for Biocultural Research

The biocultural approach in medical anthropology is an applicable perspective regardless of whether or not one is actually able to measure the biology. Research in which human beings are conceptualized as being in webs of shared meaning influences certain psychobiological processes. Demonstrated by Weller et al. (2008), biology and culture are conceptualized as being interrelated in a biocultural research design. The biocultural approach used here marries symptomatology and the results of historical trauma and low cultural consonance in social roles.

Addressing intercultural and intracultural diversity as recommended by Baer et al. (2003) is possible through a biocultural framework. Studying the various symptoms of *susto* looks at it as an example of the intracultural diversity present in the Andes. The relationship between biological and cultural variables as they relate to outcomes is addressed in research by Baer and Bustillo (1998). Having highlanders in this research on the Andes report on perceived stress and symptoms described as *susto* combines clear biological processes and physical symptoms in the context of a cultural rubric of *susto*. Biocultural medical anthropology demonstrated by Oths (1999) research uses methods such as open-ended interviews to get general social information and then transforms the data into variables that can be quantitatively tested as they relate to an illness. In this study, cultural domain analysis was used to elicit general social context to create the Cultural Consonance in Social Role Expectations, Susto Symptoms Scale, and Historical Trauma Scale, which then were utilized to transform the data into quantitatively measurable variables. Lewis-Fernandez et al. (2002) stress that in the biocultural approach one must incorporate research instruments specifically developed to elicit key features of psychophysiology. The Cohen's Perceived Stress Scale and General Health Questionnaire used in the Andes research were important in establishing measures of pathophysiology for highlanders. A methodological strength of a biocultural research design is the use of complex sampling strategies such as the case-control method employed by Brooks (2007). Case-control sampling was also effectively used in this study of *susto*. Baer et al. (2003) suggest that biocultural researchers use consensus analysis to look at systems of shared knowledge in their research samples. The shared knowledge of *susto* was investigated in the Andes using the process of cultural consensus analysis. The various attributes of a biocultural approach in

medical anthropology discussed here demonstrate how this research in the Andes was able to create a bridge between biological physical states and *susto* as being manifestations of culture. The *susto* research focused on psychopathophysiology discussed here is a bridge into biological stress research, because it uses cultural anthropology methods that have already been demonstrated as important tools for understanding biological stress by Dressler (2005) and Lewis-Fernandez et al. (2002). Dressler utilizes cultural domain analysis to investigate the aspects of Brazilian culture that create the potential for stress in one's life. He then links the social stress process through his theoretical concept of cultural consonance to the biomarker of blood pressure, which is an indicator the impact of stress on the body. Similarly, Lewis-Fernandez et al. (2002) in a study of *ataques de nervios* used a research instruments to gather data about the social aspects of Puerto Rican culture that might contribute to stress. They then employed the Explanatory Model Interview Catalogue (EMIC) and the Structured Clinical Interview for DSM-III-R to collect general psychiatric data on sufferers of the illness. The psychiatric data was then compared with the social data to identify the role of each in the stress process. These two different research projects demonstrate the efficacy of using biocultural frameworks to garner a clearer understanding of the complex relationships between biology and culture that are exemplified in the stress process.

Research Design

The research design for this project consisted of looking at *susto* symptoms, Andean social roles, historical trauma, general health, and mental well-being. The research was conducted in phases to gain a thorough and accurate understanding of the ethnography of the Callejón de Huaylas and the illness of *susto*. Sampling was an important component of the design with four different groups of informants from 11 Andean hamlets participating in the

study. Phase one consisted of informants creating free lists of the farm tools a farmer needs; listing good and bad characteristics of father/mother, husband/wife, and farmer; describing important historical events in the valley; and identifying the symptoms one experiences when they have *susto*. In the second phase, a second group of informants were asked to sort the various terms for each category from the free list tasks into piles and then to explain the relationships between the different items in each pile. For phase three, a third group of informants were asked to sort the same collection of terms from the free list activity in phase one into specific piles based on the relationships informants from phase two identified, and then to rank the terms in each pile from most to least important. The last phase of the research administered various scales consisting of yes/no questions and statements with which informants were asked to agree or disagree. The multifaceted approach enabled an accurate picture to be generated about the cultural models Andeans have for *susto* and social roles, while simultaneously identifying the complex relationships between the risk factors for developing *susto*.

To begin to identify the different components of the Andean social role, highlanders were asked about positive and negative traits of different types of individuals in their respective communities. They were asked what the characteristics of a good father and mother are. Many informants described a good father as someone who educates his children. A good mother makes sure that her children have enough food to eat. When asked about the characteristics of a good husband, the responses typically indicated someone who works hard. A good wife was described as being supportive of her husband. Highlanders were asked to think of their own neighbors and to describe the characteristics of a good neighbor. Helping neighbors in their agricultural fields was a common description associated with a good farmer. These are examples

of some of the terms that informants stated that represented the model of good parents, spouses, and neighbors in the Callejón de Huaylas.

Andeans informants also were asked to discuss significant historical events that occurred in the valley. The earthquake of 1970 was the common event that many regardless of age cited as being influential in the valley. The terrorism associated with the Shining Path movement in the 1980s was an additional experience that many informants described with a variety of statements such as the kidnapping of many local authorities and the destruction of high voltage poles. These descriptions allowed informants to describe their memories of these time periods with the anonymity of not being required to reveal whether what they described were personal experiences.

In addition to discussing historical events, informants were asked to think about the symptoms one has when they are suffering from *susto*. Most informants were familiar with *susto* even though they may not have suffered personally from the illness. They were asked, “How does one feel physically when he or she has *susto*?” and “How does one feel mentally when he or she has *susto*?”. Many symptoms were stated, but many informants commonly used terms such as “jumping in the night” and “feeling like one is drying out”. The use of similar terms by multiple informants suggests that there is a high degree of cultural salience for the cultural domain of *susto*. The common terms from each of the different domains were used to generate cards for the pile sorting phase of the research.

For the social roles, informants were asked to rank characteristics from most to least important. One of the most important characteristics for an Andean neighbor is to share your harvest with your neighbor. In the historical trauma ranking, informants ordered the events from the most to the least significant. For Andeans in the valley, the most influential event was

the earthquake of 1970. For *susto* symptoms, informants ranked the symptoms from the most to least severe in each of three stage of *susto*. In the most severe stage of *susto* highlanders describe feeling like the earth is absorbing you as being a significant symptom. The information from these ranking tasks was then analyzed using cultural consensus analysis to create the Cultural Consonance in Social Roles Expectations Scale, the Historical Trauma Questionnaire, and the *Susto* Symptoms Scale.

Terrorism and natural events have been central to the cultural history of the valley. The earthquake of 1970 left a lasting impression on the geographic landscape of the valley and the people who survived the event. Many highlanders lost loved ones and crops in the wake of the landslide. The Andes Mountains are a challenging physical environment where landslides and floods can occur without warning. There are several mines in the valley and floods are a constant risk associated with this type of enterprise. The gold mine above Jahua was implicated by informants as being the cause of the flood of 1988 where many crops in the area were destroyed. Access to clean water is another challenge in the highlands and farmers described unsanitary conditions in Huaraz and other hamlets as contributing to the spread of the cholera during 1990's. The terrorism events of the 1980's also shaped the cultural landscape by subjecting highlanders to violence on an unprecedented level. Many local political authorities disappeared and living conditions worsened for many Andeans, because of conflicts between the Shining Path and other political groups. These events comprise the recent cultural history of the valley and the trauma they generated has taken a toll on the lives of many highland farmers.

The ranking data for social roles revealed that there was consensus around two cultural models of Andean social roles. To that end, there seems to be two different cultural models for “being Andean:” highlanders who have more education seem to be least competent in social roles while Andeans who live in more rural areas farther from Huaraz have the highest competence in social roles. The social role of “being Andean” seems to be dependent upon one’s level education and living area. Proximity to urban areas has an impact on highlanders. The term “choloization” has been used to describe the changes that occur to one’s cultural model of “being Andean” when the dress and language of the rural areas is supplanted by products of urbanization such as jeans and cellular telephones. When the models one has for social role expectations are based off more rural cultural contexts they may not be relevant in a more urban environment. To effectively be able to measure cultural consonance, the Cultural Consonance in Social Role Expectations Scale was based off the elements of the cultural model used by highlanders living in the more remote area of the valley.

A Model of *Susto*

Susto has been studied in many different parts of Latin America and as Weller et al. (2002) point out many different Hispanic populations have a similar descriptive profile for *susto*. However, the entire symptom profile of *susto* had never been elicited and studied in great detail. Gillin (1945) described *susto* as magical fright and later Uzzell (1974) described it as a fright syndrome and an identity role (Uzzell 1974). In Mexico, it has also been defined as magical fright that causes a sufferer’s soul to be separated from the body (O’Neill 1975). Other definitions have focused on causal relationships. O’Neill and Selby (1968) working in Mexico described *susto* as a culturally acceptable mechanism of escape from the stress of failure to meet one’s socially agreed upon social role expectations. In the Peruvian Andes, Bolton (1981)

demonstrated that individuals with high levels of aggressiveness, a symptom of hypoglycemia, actually were hypoglycemic and therefore more likely to have had *susto* than normoglycemic individuals. Among Mexican-Americans in Texas, Trotter (1982) showed that *susto* was related to home treatments and that it was common. In his sample, it was the ninth most prominent morbidity problem in home-treated ailments. In a study of three communities in Mexico, Rubel (1984) found that sufferers of *susto* were more likely to have higher rates of mortality and to be sicker than non-sufferers. Weller et al. (2008) examined *susto* and *nervios* as comorbidities due to stress and they demonstrated relationships between *susto* and high stress levels as measured by the Perceived Stress Scale. The common themes in medical anthropological literature are that *susto* is a fright illness that results in general physically, mental, and emotional weakening of the body. The research presented here seeks to specifically identify the different symptoms of *susto* and to more fully describe the risk factors associated with developing the illness.

The data from the free list of *susto* symptoms suggest it has a complex cultural model with a set of core symptoms and another set of symptoms that occur less often. In the *susto* symptoms free list exercise, the six most common symptoms were fever, vomiting, jumping in the night, headache, not being able to sleep, and having no desire. The top six symptoms demonstrate the mixture of symptom types. Fever, vomiting, headache, and trouble sleeping all seem to be general symptoms of illness that are related to the physical body. Jumping in the night and having no desire are different types of symptoms, which can be classified as a part of a culturally acceptable way of expressing a bodily state of mental and emotional dysfunction.

It appears that one dimension that informants were using to sort the terms was definitions of illness, grouping of symptoms that are associated with general sickness cluster together in one cluster and classic *susto* symptoms in another. Highlanders organized the *susto* symptoms based

on the relationship each symptom has to illness severity and to one's cultural knowledge base. The unconstrained pile sorts seem to confirm what the free list analysis suggested: there are two different models of *susto*. One model contains symptoms associated with any illness such as fever, head pain, and nausea; the other model contains elements that seem to be specific to the illness of *susto* like “*se bota a la tierra*,” (being thrown to the ground), and “*sin animo de nada*,” (does not feel like doing anything).

In addition to sorting the *susto* symptoms into piles with no specific criteria given by the researchers, highlanders also sorted the symptoms into three distinct piles based on illness severity forming an initial, an intermediate, and a most extreme set of symptoms, and then ranked within each group the worst symptoms. It seems that the highlanders have three different cultural models for *susto* depending upon severity of the illness. When the *susto* symptom rankings were analyzed using cultural consensus analysis, there was no consensus for the sample as a whole. There was, however, consensus among persons with less than a secondary school education (median competence = 0.62) versus persons with at least some secondary education (median competence = 0.30), indicating that the level of education is a significant factor in *susto* competence. More specifically, the higher education results in lower *susto* competence. The abandonment of the folk illness model of *susto* is related to the expansion of health knowledge provided in formal health classes in school. Education complicates one's framework for talking about illness, because symptoms like headache and nausea are introduced to highlanders at health clinics and health classes in school as symptoms of being sick. Distance is another determining factor in *susto* competence; people who live the farthest from Huaraz tend to have the highest competence in *susto* symptoms. The closer one lives to Huaraz the less isolated one is when compared with farmers living in remote hamlets; therefore, these semi-urban highlanders

have greater opportunities to be exposed to alternative models of illness at urban health clinics. The *susto* symptom data demonstrate a complex cultural understanding of *susto* as either a cultural model consisting of symptoms of general sickness or a cultural model of specific ethnographically derived symptoms. These two models formed the basis for the core set of symptoms used in the *Susto* Symptoms Scale. The data generated from this particular scale provided important information about the relationships between cultural consonance and historical trauma to *susto*.

Bivariate testing of the *Susto* Symptoms Scale showed that it is better discriminator of *susto* status than the General Health Questionnaire or Cohen Perceived Stress Scale. The culturally derived *susto* scale more accurately identifies the levels of physical and mental well-being of Andeans because it can measure *susto* as a culturally acceptable expression of social dysfunction in Andean society. The General Health Questionnaire and the Cohen Perceived Stress Scale are not as able to accurately assess highland physical and mental well-being since these scales are devoid of Andean cultural sensitivity having been derived from different social contexts. The *Susto* Symptoms Scale demonstrates the advantages of using cultural domain analysis to generate local culturally salient measures of complex social concepts like *susto*.

Consonance scores as measured by the Cultural Consonance in Social Role Expectations Scale were similar for *susto* and control cases. When the cultural consonance of individuals is utilized without considering the impact of other variables, one can conclude that levels of consonance alone cannot be used to determine if an individual has suffered from *susto*. However, since cultural consonance is a measure of an individual's ability to enact agreed upon models in his or her own life, it must be considered when analyzing *susto* as a socially accepted way of dealing with one's inability to meet social roles expectations.

While cultural consonance alone could not differentiate cases and controls for *susto*, historical trauma was much more useful for looking at these relationships. Historical trauma levels as measured by the Historical Trauma Questionnaire showed that trauma scores were substantially higher among *susto* cases when compared with the scores of control cases. Furthermore, high levels of exposure to historical trauma are related to having *susto*. This finding confirms earlier research conclusions that individuals living in areas with particularly traumatic cultural histories, like the Andes, may experience suffering. The suffering can include expressing the stress as a fright illness like *susto* (Pedersen et al. 2010). The trauma that highlanders in the valley have experienced is an integral part of their cultural model of *susto*. *Susto* is an explanatory model for the stress that highlanders have endured in the aftermath of the events of the valley including various floods and terrorism (Kleinman et al. 1997). *Susto* has become a way to compartmentalize in a socially acceptable manner the unexplainable and endless catastrophic events. The anxiety and uncertainty many highlanders have felt during their lifetime is impossible for one to understand without some framework for interpretation. *Susto* seems to be one model that highlanders can employ to deal with the high levels of social stress that many of them face on a daily basis. Obviously, historical trauma cannot be overlooked when trying understanding the role of *susto* in Andean society.

Risk Factors for *Susto*

Hypothesis testing was conducted to determine the importance of low cultural consonance, historical trauma, low physical well-being, and poor mental well-being as risk factors for *susto*. I hypothesized that lower cultural consonance individuals would be more likely to have had *susto*. This hypothesis was not supported, as low cultural consonance did not directly distinguish between cases and controls. These results suggested that cultural consonance was not a risk

factor for *susto*, which did not match with the conclusions by Dressler et al. (1996, 2000) that demonstrate the relationships between stress and low cultural consonance. Since, I was not convinced that a relationship did not exist between low cultural consonance in the Andes and *susto*. I decided to further test this idea considering possible interaction effects from covariates influencing the impact of cultural consonance on *susto* symptom scores. My hypothesis was that age moderates the effect of cultural consonance on the *Susto* Symptoms Scale. I discovered that there was an interaction effect between cultural consonance and age. Further analyses showed that the hypothesis was supported. For persons under the age of 40, as cultural consonance increases, reported *susto* symptoms decrease. For persons 40 and older, there is no association of cultural consonance and *susto* symptoms. These findings suggest that older Andeans know the model of *susto* better. They are more likely to use the model of *susto* to understand their experiences of being unable to fulfill culturally agreed upon social role expectations in Andean society. It seems that for younger Andeans the cultural model of *susto* seems less important and suggests that it may be less commonly used as a way to understand current living conditions. When considering *susto* as an explanatory model, if it is a model for understanding the stress associated with the historical trauma of the past 40 years, but an informant is younger than age 40 than they will not have had the same experience as other older Andeans who have lived through the catastrophic events. Younger informants may have learned the stories of the traumas of the valley but enduring a tragedy is different than hearing about one. It is also interesting that the interaction effect places the difference between those older and younger at the age of 40, because 40 years ago would be exactly around the time of the 1970 earthquake. That event seems to have been a climatic point in Andean cultural history in the valley, and this demonstrates the importance of considering the relationships between historical trauma and

susto.

An additional hypothesis was tested using *susto* control data. Historical trauma exposure was hypothesized to be higher among *susto* cases, and the results indicated a direct effect of historical trauma on *susto* status. The hypothesis was supported, as historical trauma scores were higher among *susto* cases. These findings suggest that an individual experiencing a traumatic event is at increased risk for developing *susto*. The onset is associated with the accumulated exposure to traumatic events.

Historical trauma was also important in interpreting *susto* symptom scores. My hypothesis was the higher the levels of historical trauma individuals have faced, the more *susto* symptoms they will have experienced. There was a direct effect of historical trauma on *susto* symptoms supporting my hypothesis. For *susto* cases, as historical trauma increases *susto* symptoms dramatically increase. For non-*susto* cases, as historical trauma increases reported *susto* symptoms also increase, but at a much lower rate when compared with *susto* sufferers. These findings demonstrate that if an Andean highlander has experienced more traumatic events then they are in increased category of risk for developing *susto*.

I also wanted to know the level of influence cultural consonance may have on Andean perceived stress levels. Weller et al. (2008) demonstrated that perceived stress as measured using the Cohen Perceived Stress Scale was a risk factor for the development of *susto* among Mexicans. By determining that *susto* was significantly associated with stress their findings demonstrated an important link between stress and cultural syndromes. I thought that highlanders with lower cultural consonance would also have decreased levels of mental well-being. The hypothesis was supported; there was a direct effect of cultural consonance on perceived stress. As cultural consonance increases among highlanders there is a decrease in

perceived stress scores. More culturally consonant individuals have the lowest levels of perceived stress; therefore, they have the highest levels of mental well-being. This demonstrates that there is a relationship between stress and one's ability to enact culturally agreed upon cultural models in their daily lives. Individuals who are better able to meet the Andean social role expectations are under less stress than those highlanders who have trouble living up to the demands of their culturally defined social role. I have already shown that younger individuals with lower cultural consonance are at increased risk for *susto*. When that finding is combined with the demonstrated relationship between cultural consonance and perceived stress, it ties these results to the previous findings by Weller et al. (2008) of a strong relationship between *susto* and stress.

Historical trauma was useful in interpreting perceived stress scores. My hypothesis was Andeans that have experienced higher levels of historical trauma are more susceptible to perceived stress, and my research confirmed there was a direct effect. For *susto* cases as historical trauma increases perceived stress increases. For non-*susto* cases as historical trauma increases reported perceived stress increases but at a much lower rate when compared with *susto* sufferers. These results suggest that having experienced high levels of traumatic events is stressful, and because it is stressful it places an individual in an additional category of risk for developing *susto*.

The physical well-being of *susto* and control cases was measured using the General Health Questionnaire. Earlier research has demonstrated that individuals with *susto* are also likely to be physically weaker. Baer and Penzell (1993) found that individuals with pesticide poisoning and *susto* were sicker and weaker. In a longitudinal study in Mexico, Rubel et al. (1984) found that *susto* sufferers were at greater risk for mortality than controls. Weller et al.

(2002) in study of diabetics found that individuals with *susto* were more likely to develop diabetes when compared with controls.

Based on the earlier research, I hypothesized that individuals with lower cultural consonance would have reduced physical well-being. My research confirmed the hypothesis. Individuals with higher cultural consonance have greater physical well-being. Given the relationship between low cultural consonance and *susto*, these findings confirm that lower cultural consonance is a stressful experience and that *susto* is a culturally acceptable way for Andeans to express the reality of low cultural consonance. My conclusions support the earlier research findings that individuals with *susto* are physically weakened making them more susceptible to sickness.

Historical trauma was measured to determine if it was related to physical well-being. My hypothesis was individuals who have faced higher levels of historical trauma have a weaker physical well-being. However, my hypothesis was not supported. There was no direct effect of historical trauma on general health. For *susto* cases, as historical trauma increases general well-being remains the same. For non-*susto* cases, as historical trauma increases, reported physical well-being declines as individuals report more symptoms of nonphysical wellness. Previous research has shown that *susto* sufferers are all generally less physically healthy when compared with controls, and my findings also support this conclusion.

Low cultural consonance and high levels of exposure to historical trauma are both risk factors for *susto*. Lower cultural consonance young Andeans also experience more *susto* symptoms, greater levels of perceived stress, and reduced physical well-being. Andeans who have been exposed to high levels of historical trauma report more symptoms of *susto* and high levels of perceived stress. *Susto* is a complex cultural model and a manifestation of social stress

in the Andes. Consequently, in the Callejón de Huaylas having *susto* means that an individual has been greatly impacted by the tumultuous social history of the valley. For highlanders, *susto* is a culturally acceptable way to address the stress created by one's inability to enact culturally agreed upon models in one's life, while simultaneously dealing with the additional stress generated by historical traumas.

Limitations of Research

The complex research design employed here to study *susto* and social stress is not without areas of weakness. The cultural domain analysis methods that were used for phases one, two, and three of data collection are specific ways to collect ethnographic data about particular cultural domains. It is a three-tiered process with each previous activity building onto the next task. In the research on Andean social roles, *susto*, and historical events, three different samples of 30 highland farmers from 11 different hamlets were selected to complete the free list, pile sorting, and ranking tasks. One weakness with this type of sampling is that individuals from 11 different hamlets were pooled together into one sample. I included 11 hamlets to have an accurate snapshot of the steep Andean geographic landscape. I included hamlets with varying attributes: being extremely remote, being an intermediate distance from the capital of the valley, Huaraz, and being included in the semiurban city of Huaraz. Another weakness is that three samples of 30 informants each are not large sample sizes. However, generally 30 is the minimum number of informants required to have enough statistical power for cultural consensus analysis, and this number also will typically generate an accurate understanding of a particular cultural domain.

Free list tasks are beneficial for having a semi-structured system for assessing the elements of a cultural model. There are some weaknesses with free list tasks. One is that it can be

considered to demean culture and reduce it to terms or statements. To combat this critique I allowed informants to explain the culture meanings of each term. The cultural domain terms in my research were also combined with focus group interviews with informants to get additional clarification of the meanings of the different terms.

The free lists were then used to create cards with terms on them to be used for the unconstrained pile sorting activities, which are useful to learn how informants culturally conceptualize particular terms. It allows identification of particular elements of the cultural model of a domain that informants are accessing to organize the various terms. A weakness of this method is that informants may not make discrete distinctions between terms and therefore create a few large nonspecific groups. Another weakness is that I was using positive and negative terms for Andean social roles: and as a result, there was tendency among informants to create two piles one of positive and one negative. To deal with the generic sorting problems I asked informants to break up large groups. I also utilized the ranking task, which was the last phase of the cultural domain analysis, which only used the positive characteristics associated with Andean social role.

Constrained pile sorting and ranking tasks were the last phase of the cultural domain analysis and were useful for gaining additional clarification about the dimensions of meaning that informants are using to organize a particular cultural domain. A potential weakness with ranking tasks is that sometimes informants do not understand the purpose of ranking certain items if they view both items of equal importance. To address this issue, I sometimes had to ask informants to decide which one they would prefer to have if they could only have one item. This allowed informants to make an informed decision about the actual degree of importance of an item. Another weakness with ranking and also free listing and pile sorting tasks is that it requires

informants to be literate: many of my Andean informants had less than 6 years of education. To overcome this challenge I used both pictures and terms where it was possible. After discussing the literacy issue with my research assistants and conducting successful pilot tests of the cards, I concluded that even if someone could not read well they could recognize many of the culturally familiar terms. As a last resort, if an informant needed additional assistance I read the terms on the cards to them. While there are some weaknesses in the methods of cultural domain analysis, it has been shown by Romney et al. (1986), Dressler et al. (1996, 2000), and myself to be an extremely useful and efficient method for collecting ethnographic data about specific cultural domains.

The final phase of the research project studying *susto* used scales that were created from cultural domain analysis and additional previously published scales. The sampling strategy that was used for this phase was a case control sampling strategy commonly found in epidemiological studies of illness. A weakness of this type of sampling strategy is that it does not give an indication of the prevalence rate of the illness being studied. The researcher does know the extent of the illness burden on the study population. In previous research, I successfully employed the case-control sampling strategy to study the cultural syndrome of *chucaque* in the Peruvian Andes (Brooks 2007). I chose the case control sampling approach because it is a much more efficient method that does not require conducting interviews on the entire population of community.

There were five research scales used for the case-control study, the Cultural Consonance in Social Role Expectations Scale, the Historical Trauma Scale, the *Susto* Symptoms Scale, General Health Questionnaire, and the Cohen Perceived Stress Scale. Each one of these scales could have had potential weaknesses. To ensure the different components of each scale were cohesive,

I conducted reliability analyses of each scale, and they all meet or exceeded the Cronbach's alpha level of .60. The scales were important in generating an accurate understanding of the complex cultural model of *susto*.

The use of a classic epidemiological retrospective case control research design has potential for weaknesses. It can be problematic to discuss risk factors that are prospective when the case control design is retrospective. This is a common problem in any cross-sectional research. Friedman (2004) in his work on the strengths and potential problems of epidemiological research design cautions that determining cause and effect relationships when using case control research designs can be challenging. In the *susto* research project informants either reported having *susto* or symptoms, but then talk about historical traumas and elements of cultural consonance as a way of retrospectively reporting to account for *susto*. It is impossible to reject the hypothesis that they have *susto* and report consonance and historical trauma retrospectively (Friedman 2004). However, the case control design was chosen despite its potential weakness for its applicability to studying particular illnesses such as *susto* that may have potentially low prevalence rates and for its efficiency for collecting data. It is an important tool for detecting minute differences between members of the same population. These differences between the control group and those with the illness can help determine why some informants have a particular illness. The differences between these two groups can help to establish social variables for further investigation as potential risk factors for an illness. It also enables the certain variables such as gender and socioeconomic status to be controlled at the beginning of the data collection so that they will not have to be controlled for again in the analysis. The case-control methods are applicable for research in medical anthropology, where rare illnesses are investigated that can have potentially complex underlying social and cultural

pathophysiologies.

The study was primarily focused on illness etiology and does not focus on diagnosis and treatment. The main purpose of this research was to investigate risk factors for *susto*, which necessitated a focus on illness etiology. Diagnosis and treatment of *susto* while important for understanding the illness were beyond the scope of this study. Those types of elements would be more likely included in studies focused on *susto* description and less on its etiology. However, diagnosis and treatment are important with respect to the cultural model of *susto* and would provide new directions for this research to explore. The conclusions about risk factors for *susto* drawn from this research could be considered as they relate to diagnosis and treatment for the illness. Historical trauma and cultural consonance could be studied with respect to *susto* diagnosis and treatment, to determine if there are any relationships that can be identified between those important components of the cultural model of *susto* and distinct patterns of causality .

Implications

Susto research is important for both anthropology and the biomedical community because *susto* is not bound to one culture. Geography does not confine the syndrome and with the worldwide mass population movements over the past 50 years, *susto* cases are increasingly showing up in hospitals and medical clinics in the United States. The implications of this research on the Andean cultural model of *susto* are important for biomedicine. The *Susto* Symptoms Scale is the first set of diagnostic symptoms to be created and then effectively used for *susto*. My hope is to publish the *Susto* Symptoms Scale in both English and Spanish language journals so that the symptoms scale could be used by biomedical doctors. After becoming aware of the illness of *susto*, a doctor could use the scale to assess the intensity of sickness from which an individual was suffering and determine the severity of the cases based

on the number of symptoms the patient reports. In addition, many of the symptoms from the scale, such as nausea and being unable to sleep, are symptoms that biomedicine would be able to effectively treat.

One of the implications from research on historical trauma is that *susto* is an idiom for historical trauma. The widely shared explanatory model of *susto* can best explain the impact of historically traumatic macroevents, while at the same time detecting microevents such as being chased by a bull and being involved in a car wreck. Cultural consonance identified the small-scale everyday stressors. The stress associated with low cultural consonance is an accumulation of not being able to live up to what you are expected to do on a daily basis. Individuals with low cultural consonance are worn down overtime by the stress. Historical trauma is another type of stress that consists of macroevents that contribute to stress. This research on stress and *susto* links two important bodies of literature: classic studies of the impact of stress such as those of Palinkas et al. (1993) and Oliver-Smith (1986), in regards to the Exxon Valdez oil spill and the 1970 Andean earthquake, and the ethnographic literature on the Andes from Doughty (1968) and Stein (1961). These bodies of literature suggest social stress is detrimental to the well-being of a people. The difficult social history of the Andean people is a great example, since beginning with conquest by Spain and continuing until now with unfavorable governmental policies, the people of the Andes face increasing marginalization.

The research suggests that individuals can have symptoms of *susto* without having been formally diagnosed as having being “*asustado*.” It seems that one is only culturally labeled with *susto* if a traditional healer makes this diagnosis. One can feel bad but still move through life without being labeled a *susto* sufferer. However, if a highlander has a severe case of *susto* then he or she normally goes to a healer, who in turn describes the person’s condition as “*asustado*.”

Gravity of the illness seems to be important in the diagnosis of *susto*. Oths (1994) has shown that seriousness of illness is the ultimate determining factor that leads highlanders to expend precious resources for treatment. This research reveals the importance of gravity of illness, which is also why the Susto Symptoms Scale is useful because of the disconnect between biocultural syndromes and the seriousness of the illness. If one is diagnosed by a healer this increases the likelihood they have been influenced through the process of socialization. The healer will have identified the symptoms and labeled the individuals as “asustado.” When one has a mild case of symptoms they are less likely to have been socialized in the model. The symptoms of *susto* are important but someone that is experiencing only a mild set of symptoms and does not adhere to the cultural understanding of *susto*, will not use that explanatory model to understand their current condition. They may be experiencing social stress associated with low cultural consonance or historical trauma, but if they do not prescribe to the model of *susto* then they will not be “asustado.” It is only those individuals who either adhere to the cultural model of *susto* or have a severe set of symptoms that will be labeled as “asustado,” through self-diagnosis or by having the condition labeled by a traditional healer. This research confirms what Young and Garro’s (1981) work in Mexico and Oths (1994) study in Peru suggest, which is that not considering illness gravity and the disconnect between biocultural syndromes and seriousness of illness is problematic in the study of cultural syndromes.

For younger Andeans there is a distinct pattern of causality. Younger Andeans are distressed by low cultural consonance and they are experiencing symptoms but have not yet learned the model of *susto*. They are reporting *susto* symptoms but not reporting *susto*. The question is, Why are younger highlanders experiencing these symptoms but not reporting *susto*? The research reported here suggests there is a longitudinal effect occurring. The reporting of

susto as a model for particular symptoms is a cultural developmental process. At first, younger highlanders have difficulty learning the model because of the informational interference generated by formal education, urban environments, and historical trauma. However, eventually these highlanders will learn the model of *susto* and utilize it when referencing particular sets of symptoms. The factors that contribute to this pattern are: level of education and proximity to an urban environment. Younger Andeans also suffer from *susto* but it those who have less education and are from more rural areas. What these findings suggest is that education level impacts the likelihood that one will prescribe to the cultural model of *susto*. If one has less education and is younger than they will not have been influenced by health classes at school, which teach the common symptoms of illness in biomedicine such as fever, nausea, and head pain. Those with less education also are more likely to live in rural areas. One reason for this is that all rural areas do not have a secondary school, so if one lives in this type of hamlet then they would only have access to primary education. In addition, living in more rural areas would increase one chances of learning the rural model of “being Andean” and seeing that model enacted in daily life. They would not have been influenced by the “choloization” that is occurring in some parts of the valley. These factors help to describe the distinct pattern of causality that can be found among younger Andeans.

However, when they are also considered alongside historical trauma an even clearer understanding of causality emerges. Young highlanders that live in rural areas would be more likely to have heard the stories of terrorism and the earthquakes and floods that have plagued the valley. They would not have had these cultural stories replaced with the internet and other urban conquests. Additionally, the historical trauma of these events may have been felt for longer in the more rural areas where reconstruction and aide would have been much slower to arrive.

Susto must be some form of model or identity that is relevant in the Andean social context (Crandon 1983). In his research on illness, Kleinman et al. (1997) demonstrated that individuals often use what he calls ‘explanatory models’ to cope with their current unhealthy condition. *Susto* can be understood as an explanatory model, useful only to those Andeans who have low cultural consonance and high social stress. Not all individuals with low cultural consonance have *susto*. The research suggests that Andeans who cannot live up to the cultural model of being Andean (those who are not culturally consonant) may or may not find the *susto* explanatory model to be useful, depending upon their age.

The research discussed here identified multiple risk factors for *susto*. Low cultural consonance placed one in an increased category of risk for developing *susto*. Cultural consonance addresses the issue of the Andean social role and how adherence to it as a framework for social life is associated with level of education and living area. Exposure to high levels of historical trauma increase the chance that one will use *susto* as an explanatory model for rationalizing these occurrences. Suffering from high levels of perceived stress adds another dimension to the risk of developing *susto*. Having low physical wellbeing also contributes to the development of *susto*. Some combination of these risk factors can help to predict which highlanders should be placed in an increased category of risk for developing *susto*.

Directions for Further Research

The specific research on cultural consonance would be helpful for implementing social intervention programs in the Andes. The program could be designed to help highlanders be more successful at fulfilling their culturally agreed upon social roles in Andean society. The different elements of the Cultural Consonance in Social Role Expectations Scale could be used to create community discussion forums. From the community focus groups, educational programs could

be tailored to create stronger ties between neighbors, work on spousal relations, and assist with parental obligations, which this research has shown are the three main components of the Andean social role. These areas require continued work and resources to dedicated to developing programs and classes to help strengthen these social bonds that are so important to the Andean people but are under constant attack from the continued influence of urbanization.

The next direction for the research on *susto* and social stress is to use *Susto Symptoms Scale* for research among Hispanic populations in the United States. I want to test the applicability of the scale among other Hispanic ethnic populations. The *susto* scale could be used to study individuals who regularly see a biomedical doctor and those that do not attend hospitals or clinics. The research would seek to determine if individuals in the United States who suffer from *susto* are less likely to regularly see a biomedical doctor. This research would help to further understand *susto* and the symptoms of *susto* as cultural models for dealing with stressful experiences.

An additional research direction would be to use *Cultural Consonance in Social Role Expectations Scale* for research in the Andes looking at cases of general illness. The research would seek to establish whether there is an association between low cultural consonance and treatment choice. The research question being tested would be, Are individuals who are unable to meet social role expectations more likely to seek alternative medical treatment? What are the other factors that are impacting medical treatment choice for low cultural consonance individuals. The research would focus on determining where the informants have sought medical treatment in the last year. It would include research on Andean treatment choice as it relates to levels of cultural consonance and include biomedical doctors, health clinics, hospitals, herbalists, and *curanderos* (traditional folk healers).

Conclusions

The research presented in these pages on cultural consonance, historical trauma, and *susto* demonstrates important relationships between risk factors for *susto*. Individuals can have *susto* without being formally diagnosed. The Susto Symptom Scale is helpful as a diagnostic tool for determining if one has *susto*. *Susto* is an idiom for historical trauma and is helpful in assessing the level of exposure to historical trauma that highlanders in the valley have endured. Some highlanders can have *susto* symptoms but not be labeled as being “asustado.” Young Andeans have a distinct pattern of causality that is defined by their level of education and proximity to an urban environment. *Susto* seems to be an “explanatory model” to deal with anxiousness associated with suffering from an illness. There are multiple risk factors that can help to determine if an individual is at an increased risk for developing *susto*. These are increasingly important as further research may try to create intervention programs to alleviate the causal risks associated with *susto*. *Susto* is the combination between low cultural consonance, age, and a historically traumatic past; and it is these factors that make the cultural model of *susto* applicable.

References Cited

Babb, Florence E.

- 1986 Producers and Reproducers: Andean Marketwomen in the Economy. *In Women and Change in Latin America*. J. Nash and H. Safa, eds. Pp. 53-64. South Hadley: Bergin and Garvey.
- 1989 *Between Field and Cooking Pot: The Political Economy of Marketwomen in Peru*. Austin: University of Texas.

Baer, Roberta D. and Marta Bustillo

- 1993 *Susto* and *Mal de Ojo* Among Florida Farmworkers: Emic and Etic Perspectives. *Medical Anthropology Quarterly* 7: 90-100.
- 1998 *Caida de Mollera* Among Children of Mexican Migrant Workers: Implications for the Study of Folk Illnesses. *Medical Anthropology Quarterly* 12: 241-249.

Baer, Roberta D. and Dennis Penzell

- 1993 *Susto* and Pesticide Poisoning Among Florida Farmworkers. *Culture, Medicine, and Psychiatry* 17:321-327.

Baer, Roberta D., Susan C. Weller, Javier Garcia de Alba Garcia, Mark Glazer, Robert Trotter, Lee Pachter, and Robert E. Klein

- 2003 A Cross-Cultural Approach to the Study of the Folk Illness *Nervios*. *Culture, Medicine, and Psychiatry* 27: 315-337.

Barlett, Peggy F. and Setha M. Low

- 1980 *Nervios* in Rural Costa Rica. *Medical Anthropology* 4: 523-564.

Bernard, H. Russell

- 2002 *Research Methods in Anthropology*. Walnut Creek: Altamira

Bode, Barbara

- 1989 *No Bells to Toll: Destruction and Creation in the Andes*. New York: Charles Scribner's Sons.

Bolton, R.

- 1981 *Susto*, Hostility, and Hypoglycemia. *Ethnology* XX, 4: 261-276.

Bourque, Susan C., and K.B. Warren

- 1981 *Women of the Andes: Patriarchy and Social Change in Two Peruvian Towns*. Ann Arbor: University of Michigan

Brooks, Benjamin Blakely

2007 Using a Social Stress Gauge to Study *Chocake* and Social Stress Among Participants of the Callejón de Huaylas Valley, Peru: A Case-Control Study. MA. thesis, Department of Anthropology, The University of Alabama.

Browner, C. H., Bernard R. Ortiz de Montellano, Arthur J. Rubel, Jean Benoist, E.L. Cerroni-Long, Jadwiga Charewska, Benjamin N. Colby, Linda C. Garro, Nancie L. Gonzalez, Byron Good, Roberta L. Hall, J.M. Janzen, Arthur Kleinman, and Angelina Pollak-Eltz
1988 A Methodology for Cross-cultural Ethnomedical Research. *Current Anthropology* 29(5): 681-702.

Carey, James W.

1993 Distribution of Culture-Bound Illnesses in the Southern Peruvian Andes. *Medical Anthropology Quarterly* 7:281-300.

Cavender, Anthony

1996 A Note on the Origin and Meaning of Bold Hives. *Southern Folklore* 53:17-24.

Cavender, Anthony, and Steve Crowder

2002 White-Livered Widders and Bad-Blooded Men: Folk Illness and Sexual Disorder in Southern Appalachia. *Journal of the History of Sexuality* 11: 637-649.

Crandon, L.

1983 Why Susto? *Ethnology* 22: 153-167.

Davis, Dona Lee and Peter J. Guarnaccia

1989 Health, Culture, and the Nature of Nerves: Introduction. *Medical Anthropology* 11: 1-13.

De Rios, Marlene Dobkin

1981 *Saladerra*-A Culture-Bound Misfortune Syndrome in the Peruvian Amazon. *Culture, Medicine, and Psychiatry* 5: 193-213.

Doughty, Paul L.

1968 *Huaylas: An Andean District in Search of Progress*. Ithaca: Cornell University.

Dressler, William W.

- 1993 Health in the African-American Community: Accounting for Health Inequalities. *Medical Anthropology Quarterly* 7(4): 325-345.
- 1999 Modernization, Stress, and Blood Pressure: New Directions in Research. *Human Biology* 71:583-605.
- 2001 Culture and Individual Adaptation. Research Report 1- Brazil 2001.
- 2004 Culture, Stress, and Cardiovascular Disease. *In The Encyclopedia of Medical Anthropology*. Carol R. Ember and Melvin Ember, eds. Pp. 328-334. New York: Kluwer Academic/Plenum.
- 2005 What's Cultural about Biocultural Research? *Ethos* 33:20-45.

Dressler, William W. and James R. Bindon.

- 2000 The health consequences of cultural consonance: cultural dimensions of lifestyle, social support and arterial blood pressure in an African American community. *American Anthropologist* 102: 244-260.

Dressler, William W., Jose Ernesto Dos Santos, and Mauro Campos Balieiro.

- 1996 Studying diversity and sharing in culture: An example of lifestyle in Brazil. *Journal of Anthropological Research* 52: 331-353.

Edwards, James W.

- 1984 Indigenous *Koro*, A Genital Retraction Syndrome of Insular Southeast Asia: A Critical Review. *Culture, Medicine, and Psychiatry* 8:1-24.

Finerman, Ruthbeth

- 1989 The Burden of Responsibility: Duty, Depression, and *Nervios* in Andean Ecuador. *In Gender, Health, and Illness: The Case of Nerves*. Donna Davis and Setha Low, eds. Pp 49-65. New York: Hemisphere.

Foulks, Edward F.

- 1973 The Epidemiology of the *Artic Hysterias* and Other Mental Disorders. *In The Artic Hysterias of the North Alaskan Eskimo*. David H. Maybury-Lewis, Ed. Pp 24-36. Washington: American Anthropological Association.

Friedman, Gary D.

- 2004 *Primer of Epidemiology*. New York: McGraw-Hill.

Gaines, Atwood D., and Paul Farmer

- 1986 Visible Saints: Social Cynosures and Dysphoria in the Mediterranean Tradition. *Culture, Medicine, and Psychiatry* 11:295-330.

Gillin, J

- 1945 Magical Fright. *Psychiatry* 11: 387-400.

- Glick, Leonard B.
1967 Medicine as a Ethnographic Category: The Gimi of the New Guinea Highlands. *Ethnology* 6:31-56.
- Good, Byron J.
1977 The Heart of What's the Matter: The Semantics of Illness in Iran. *Culture, Medicine, and Psychiatry* 1:25-58.
1994 Illness Representations in Medical Anthropology: A Reading of the Field. *In Medicine, Rationality, and Experience: An Anthropological Perspective*. Cambridge: Cambridge University Press.
- Greenway, C.
2002 Healing Soul Loss. *in Medical Pluralism in the Andes*. Christine Greenway and Joan Koss-Chioino, Eds. Pp.93-106. Florence: Psychology Press.
- Guarnaccia, Peter J.
1993 *Ataques de Nervios* in Puerto Rico: Culture-Bound Syndrome or Popular Illness? *Medical Anthropology* 15:157-170.
- Guarnaccia, Peter J., and Pablo Farias
1988 The Social Meaning of *Nervios*: A Case of a Central American Woman. *Social Science and Medicine* 26:1223-1231.
- Guarnaccia, Peter J., M. Rivers, F. Franco, and C. Neighbors
1996 The Experiences of *Ataques de Nervios*: Towards an Anthropology of Emotions in Puerto Rico. *Culture, Medicine, and Psychiatry* 20:343-367.
- Guarnaccia, Peter J., and L. H. Rogler
1999 Research on Culture-Bound Syndromes: New Directions. *American Journal of Psychiatry* 156:1322-1327.
- Guzmán, Abimael
1995 We Are the Initiators. *In The Peru Reader*. Orin Starn, Carlos Iván Degregori, and Robin Kirk, Eds. Pp 310-315. Durham: Duke.
- Hinton, Devon, Khin Um, and Phalnarith Ba
2001 A Unique Panic-Disorder Presentation Among Khmer Refugees: The Sore-Neck Syndrome. *Culture, Medicine, and Psychiatry* 25:297-316.
- Joralemon, Donald
2006 Recognizing Biological, Social, and Cultural Interconnections: Evolutionary and Ecological Perspectives on a Cholera Epidemic. *In Exploring Medical Anthropology*. Donald Joralemon. Pp 30-43. Boston: Pearson.

- Klein, J.
 1978 *Susto: The Anthropological Study of Diseases of Adaptation*. *Social Science and Medicine* 12:23-28.
- Kleinman, Arthur, V Das, and M. Lock
 1997 *Social Suffering*. Berkeley: University of California.
- Lewis-Fernández, Roberto, Peter J. Guarnaccia, Igda E. Martínez, Ester Salmán, Andrew Schmidt, and Michael Liebowitz
 2002 Comparative Phenomenology of *Ataques de Nervios*, Panic Attacks, and Panic Disorder. *Culture, Medicine, and Psychiatry* 26: 199-223.
- Lock, Margaret
 1990 On Being Ethnic: the Politics of Identity Breaking and Making in Canada, or, Nerva on Sunday. *Culture, Medicine, and Psychiatry* 14:237-254.
- Logan, M.H.
 1993 Lines of Inquiry on the Illness of *Susto*. *Medical Anthropology* 15:189-200.
- Low, Seth M.
 1989 Gender, Emotion, and *Nervios* in Urban Guatemala. *In* Gender, Health, and Illness: The Case of Nerves. Donna Davis and Setha Low, eds. Pp 23-48. New York: Hemisphere.
- Morsy, Soheir
 1978 Sex Roles, Power, and Illness in an Egyptian Village. *American Ethnologist* 5:137-150.
- Mumford, Jeremy
 1998 The Taki Onqoy and the Andean Nation: Sources and Interpretations. *Latin American Research Review* 33: 150-165.
- Oliver-Smith, Anthony
 1986 *The Martyred City: Death and Rebirth in the Andes*. Albuquerque: University of New Mexico Press.
- O'Neil, C.W.
 1975 An Investigation of Reported 'Fright' as a Factor in the Etiology of *Susto*, 'Magical Fright.' *Ethos* 3:41-63.
- O'Neil, Carl W., and Arthur J. Rubel
 1980 The Development and Use of a Gauge to Measure Social Stress in Three Mesoamerican Communities. *Ethnology* 14:111-127.

- O'Neill, C.W. and H. A. Selby
 1968 Sex Differences in the Incidence of *Susto* in Two Zapotec Pueblos: An Analysis of the Relationship Between Sex Role Expectations and Folk Illness. *Ethnology* 7: 95-105.
- Oths, Kathryn S.
 1994 Health Care Decisions of Households in Economic Crisis: An Example from the Peruvian Highlands. *Human Organization* 53:245-254.
 1999 *Debilidad*: A Biocultural Assessment of an Embodied Andean Illness. *Medical Anthropology Quarterly* 13:286-315.
- Palinkas, Lawrence A. , Michael A. Downs, John S. Pettersen, and John Russell
 1993 Social, Cultural, and Psychological Impacts of the Exxon Valdez Oil Spill. *Human Organization* 52:1-13
- Pang, Keum Young Chung
 1990 *Hwabyung*: The Construction of a Korean Popular Illness Among Korean Elderly Immigrant Women in the United States. *Culture, Medicine, and Psychiatry* 14:495-512.
- Pedersen, Duncan, Hanna Kienzler, and Jeffrey Gamarra
 2010 *Llaki* and *Ñakary* : Idioms of Distress and Suffering Among the Highland Quechua in the Peruvian Andes. *Culture, Medicine, and Psychiatry* 34: 279-300.
- Pedersen, Duncan, Jacques Tremblay, Consuelo Errázuriz, and Jeffrey Gamarra
 2008 The Sequelae of Political Violence: Assessing Trauma, Suffering, and Dislocation in the Peruvian Highlands. *Social Science and Medicine* 67:205-217.
- Rasmussen, Susan J.
 1992 Reflections on *Tamazai*, a Taureg Idiom of Suffering. *Culture, Medicine, and Psychiatry* 16:337-365.
- Rebhun, L.A.
 1993 Nerves and Emotional Play in Northeast Brazil. *Medical Anthropology Quarterly* 7:131-151.
- Ritenbaugh, Cheryl
 1982 Obesity as a Culture-Bound Syndrome. *Culture, Medicine, and Psychiatry* 6: 347-361.
- Romney A.K., S.C. Weller, and W.H. Batchelder
 1986 Culture as Consensus: A Theory of Culture and Informant Accuracy. *American Anthropologist* 88: 313-38.

Roncagliolo, Santiago

2007 *La Cuarta Espada: La Historia de Abimael Guzmán y Sendero Luminoso*.
Barcelona: Random House Mondadori

Rubel, Arthur.J.

1960 Concepts of Disease in Mexican-American Culture. *American Anthropologist* 62(5):
795-814.

1964 The Epidemiology of a Folk Illness: *Susto* in Hispanic America.
Ethnology 3:268-283.

Rubel, Arthur J., and Carl W. O'Neill, and Rolando Collado-Ardón

1984 *Susto A Folk Illness*. Berkeley: University of California Press.

Spiro, Melford E.

1952 Ghosts, Ifaluk, and Teleological Functionalism. *American Anthropologist*
54: 497-503.

Stein, William W.

1961 *Hualcan: Life in the Highlands of Peru*. Ithaca: Cornell University.

1985 Townspeople and Countryside in the Callejón de Huaylas. *In Peruvian
Contexts of Change*. W. Stein, Ed. Pp. 211-331. New Brunswick: Transaction.

Turner, Mark

1997 *From Two Republics to One Divided*. Durham: Duke University.

Weismantel, Mary J.

1988 *Food, Gender, and Poverty in the Ecuadorian Andes*.

Philadelphia: University of Pennsylvania 2001 *Cholas and Pishtacos: Stories of
Race and Sex in the Andes*. Chicago: University of Chicago.

Weller, Susan C., Roberta D. Baer, Javier Garcia de Alba Garcia, and Ana L. Salcedo Rocha

2008 *Susto and Nervios: Expressions for Stress and Depression*.
Culture, Medicine, and Psychiatry 32: 406-420.

Stevenson, I. Neil

1977 *Colerina: Reactions to Emotional Stress in the Peruvian Andes*.
Social Science and Medicine 11:303-307.

Tousignant, Michel

1984 *Pena in the Ecuadorian Sierra: A Psychoanthropological Analysis of
Sadness*. *Culture, Medicine, and Psychiatry* 8:381-398.

Trotter, Robert T., II

1982 *Susto: The Context of Community Morbidity Patterns*. *Ethnology* 21:215-226.

- Trotter, Robert T., II Bernard Ortiz de Montellano, and Michael Logan
 1989 *Fallen Fontanelle* in the American Southwest: Its Origins, Epidemiology,
 and Possible Organic Causes. *Medical Anthropology* 10:211-221.
- Uzzell, D.
 1974 *Susto* Revisited: Illness as Strategic Role. *American Ethnologist* 1:369-378.
- Van Schaik, Eileen
 1989 Paradigms Underlying the Study of Nerves as a Popular Illness Term in
 Eastern Kentucky. *Medical Anthropology* 11:15-28.
- Ware, Norma C., and Arthur Kleinman
 1992 Culture and Somatic Experience: The Social Course of Illness in Neurasthenia
 and Chronic Fatigue Syndrome. *Psychosomatic Medicine* 54:546-560.
- Weller, Susan C., Trenton K. Roebush II, and Robert E. Klein
 1991 An Epidemiological Description of a Folk Illness: A Study of *Empacho*
 in Guatemala. *Medical Anthropology* 13:19-31.
- Weller, Susan C., Roberta D. Baer, Javier Garcia de Alba Garcia, and Ana L. Salcedo Rocha
 2008 *Susto* and *Nervios*: Expressions for Stress and Depression.
Culture, Medicine, and Psychiatry 32: 406-420.
- Weller, Susan C., Roberta D. Baer, Javier Garcia de Alba Garcia, Mark Glazer, Robert Trotter,
 Lee Pachter, and Robert E. Klein
 2002 Regional Variation in Latino Descriptions of *Susto*. *Culture, Medicine,
 and Psychiatry* 26:449-472.
- Wikan, Unni
 1989 Illness From Fright or Soul Loss: A North Balinese Culture-Bound
 Syndrome? *Culture, Medicine, and Psychiatry* 13:25-50.
- Young, Allan
 1975 Why Amhara Get *Kureynya*: Sickness and Possession in a Ethiopian Zar
 Cult. *American Ethnologist* 2: 567-584.
- Young, James C. and Linda C. Garro
 1981 Medical Choice in a Mexican Village. Prospect Heights: Waveland.

Appendix A: Free list Data Collection Form

1. What are the characteristics of a good man in the Callejón de Huaylas?

2. What are the characteristics of a good woman in the Callejón de Huaylas?

3. What are the characteristics of a good farmer in the Callejón de Huaylas?

4. What are the characteristics of a good father in the Callejón de Huaylas?

5. What are the characteristics of a good mother in the Callejón de Huaylas?

6. What does a farmer need to have in order to farm in the Callejón de Huaylas?

7. What are the characteristics of a bad man in the Callejón de Huaylas?

8. What are the characteristics of a bad woman in the Callejón de Huaylas?

9. What are the characteristics of a bad farmer Callejón de Huaylas??

10. What are the characteristics of a bad mother in the Callejón de Huaylas?

11. What are the characteristics of a bad father in the Callejón de Huaylas?

12. List all the symptoms of *susto*?

13. List as many historic events that have happened in the valley that you can remember?

14. List as many traumatic events that have happened in the valley that you can remember?

15. List as many important events that have happened in the valley that you can remember?

Appendix B: Unconstrained Pile sort Data Collection Form

Phase 2 Data Collection Form

Demographics #

Sex:

Age:

Where do you live?

How long have you lived there?

Do you have children?

What do you do for a living?

How many years of education do you have?

Pile sort 1-Farm Tools

Pile 1

Pile 2

Pile 3

Pile 4

Pile 5

Pile 6

Pile 7

Pile 8

Pile Sort 2- *Susto* Symptoms

Pile 1

Pile 2

Pile 3

Pile 4

Pile 5

Pile 6

Pile 7

Pile 8

Pile sort 3-Historical Events

Pile 1

Pile 2

Pile 3

Pile 4

Pile 5

Pile 6

Pile 7

Pile 8

Pile sort 4- Social Roles

Pile 1

Pile 2

Pile 3

Pile 4

Pile 5

Pile 6

Pile 7

Pile 8

Pile 9

Pile 10

Appendix C: Constrained Pile sorting and Ranking Data Collection Form

Phase 3 Data Collection Form

Demographics

Sex:

Age:

Where do you live?

How long have you lived there?

Do you have children?

What do you do for a living?

How many years of education do you have?

Pile sort 1-Farm Tools

Pile 1

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

Notes:

Pile 2

1.

2.

3.

4.

5.

6.

7.

8.

Notes:

Pile 3

1.

2.

3.

4.

5.

6. _____

7. _____

8. _____

Notes: _____

Pile Sort 2- *Susto* Symptoms

Pile 1

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

Notes: _____

Pile 2

1. _____

2. _____

3. _____

4. _____
5. _____
6. _____
7. _____
8. _____

Notes: _____

Pile 3

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

Notes: _____

Pile sort 4- Social Roles

Pile 1

1. _____
2. _____

3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____

Notes: _____

Pile 2

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

11. _____

12. _____

Notes: _____

Pile 3

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

Notes: _____

Appendix D: Case-Control Data Collection Form

Phase 4 Interview Schedule

Demographics

Sex:

Age:

Where do you live?

How long have you lived there?

Do you have children?

What do you do for a living?

How many years of education do you have

Cultural Consonance in Social Role Expectations Scale

| Agricultural Wealth | Yes | No |
|--|-----|----|
| 1. Do you grow potatoes? | | |
| 2. Do you grow maize? | | |
| 3. Do you grow wheat? | | |
| 4. Do you grow lima beans? | | |
| 5. Do you grow oca? | | |
| 6. Do you own bull(s)? | | |
| 7. Do you own a donkey(s)? | | |
| 8. Do you own a lampa? | | |
| 9. Do you help your neighbors harvest often? | | |
| 10. Do you own a queshe? | | |
| 11. Do you help your neighbors plant often? | | |

12. How many hectares of land do you own?

| Social Role Questions | Yes | No |
|------------------------------------|-----|----|
| 1. Do you cook every day? | | |
| 2. Do you wash clothes every week? | | |
| 3. Do you plant crops every year? | | |

| Social Role Questions | disagree completely | disagree | agree | agree completely |
|---|---------------------|----------|-------|------------------|
| 4. I sometimes do not work very hard. | | | | |
| 5. I find it difficult to take care of my | | | | |

| | | | | |
|--|--|--|--|--|
| husband/wife. | | | | |
| 6. Educating my children is difficult. | | | | |
| 7. Sometimes my home is not supported as well as I would like. | | | | |
| 8. Sometimes my wife/husband hits me. | | | | |
| 9. My children are sometimes not well cared for. | | | | |
| 10. I cannot share my harvest with my neighbors. | | | | |
| 11. It is difficult to feed my children. | | | | |
| 12. My neighbors do not have lunch with my family often. | | | | |
| 13. It is important that people think of me as a respectful person. | | | | |
| 14. Sometimes my neighbors let me plant on their land. | | | | |
| 15. Sometimes I do not have enough work to support my children well. | | | | |

Susto Symptoms Scale

In the past five years have you had any of these symptoms?

| <i>Susto</i> Symptoms | Yes | No |
|------------------------|-----|----|
| 1. vomiting | | |
| 2. heat in the stomach | | |
| 3. fever | | |
| 4. loss of appetite | | |
| 5. lacking energy | | |

| | | |
|---|--|--|
| 6. body aches | | |
| 7. bored | | |
| 8. sick | | |
| 9. dry up | | |
| 10. feel like the earth absorbs you | | |
| 11. jumping in bed during the night | | |
| 12. having bad dreams | | |
| 13. not being able to sleep | | |
| 14. head pain | | |
| 15. heart pain | | |
| 16. crying | | |
| 17. worrying | | |
| 18. thinking about being cured | | |
| 19. your spirit leaves you | | |
| 20. feeling as if falling to the ground | | |
| 21. feeling frightened | | |
| 22. depressed | | |

Historical Trauma Scale

| Historical Trauma Questions | not at all | a little | a lot |
|--|------------|----------|-------|
| 1. Were you impacted by the 1988 flood that was caused by the gold mine? | | | |
| 2. Were you impacted by earthquake of 1970? | | | |

| | | | |
|--|--|--|--|
| | | | |
| 3. Were you impacted by the crop freeze of 2008? | | | |
| 4. Were you impacted by the cholera epidemic of 1990? | | | |
| 5. Were you impacted when the terrorists went around killing authorities, bombed houses, and knocked down the electrical towers? | | | |

General Health Questionnaire

| General Health Questions | much less than usual | same as usual | more than usual | much more than usual |
|---|----------------------|---------------|-----------------|----------------------|
| 1. Have you recently been able to concentrate on whatever you were doing? | | | | |
| 2. Have you recently lost much sleep over worry? | | | | |
| 3. Have you recently felt that you were playing a useful part in things? | | | | |
| 4. Have you recently felt capable of making decisions about things? | | | | |
| 5. Have you recently felt constantly under strain? | | | | |
| 6. Have you | | | | |

| | | | | |
|---|--|--|--|--|
| recently felt that you couldn't overcome your difficulties? | | | | |
| 7. Have you recently been able to enjoy your normal day-to-day activities? | | | | |
| 8. Have you recently been able to face up to your problems? | | | | |
| 9. Have you recently been feeling unhappy and depressed? | | | | |
| 10. Have you recently been losing self-confidence in yourself? | | | | |
| 11. Have you recently been thinking of yourself as a worthless person? | | | | |
| 12. Have you recently been feeling reasonably happy, all things considered? | | | | |

Cohen's Perceived Stress Scale

Instructions:

Dear Mr. or Ms.:

The questions in this questionnaire refer to the feelings and thoughts that you have had during the last month.

Put an "X" in the box which best expresses your current situation, keeping in mind the last month. For each question, please choose only one option.

Respond as quickly as possible.

Thank you very much for your cooperation.

| Perceived Stress Question | never | almost never | once in a while | frequently | almost always |
|---|-------|--------------|-----------------|------------|---------------|
| 1. In the last month, have you been able to sleep enough hours? | | | | | |

| Perceived Stress Question | never | almost never | once in a while | frequently | almost always |
|---|-------|--------------|-----------------|------------|---------------|
| 1. In the last month, have you felt upset because of some unexpected situation? | | | | | |
| 2. In the last month, have you felt incapable of controlling important events in your life? | | | | | |
| 3. In the last month, have you felt constantly tense? | | | | | |
| 4. In the last month, did you successfully resolve the unpleasant arguments in your life? | | | | | |

| Perceived Stress Question | never | almost never | once in a while | frequently | almost always |
|--|-------|--------------|-----------------|------------|---------------|
| 5. In the last month, did you feel that you successfully faced the important changes that were occurring in your life? | | | | | |
| 6. In the past month, did you feel | | | | | |

| | | | | | |
|---|--|--|--|--|--|
| confident in your ability to manage your personal problems? | | | | | |
| 7. In the last month, did you feel that things were turning out for you the way you wanted? | | | | | |
| 8. In the last month, did you find that you were not able to resolve all the situations that you had to face? | | | | | |
| 9. In the last month, have you been able to control the unpleasant events in your life? | | | | | |
| 10. In the last month, did you feel that you were brought to a standstill by the situations that were happening to you? | | | | | |
| 11. In the last month, have you felt upset by the situations that were out of your control? | | | | | |
| 12. In the last month, have you found yourself thinking about the situations that you have to resolve? | | | | | |
| 13. In the last month, have you been able to manage your time according to your own needs? | | | | | |
| 14. In the last month, did you feel that your problems had mounted up on you? | | | | | |

Appendix E: Informed Consent Form

UNIVERSITY OF ALABAMA Informed Consent for a Research Study

You (*and your child, spouse, partner, caregiver, etc.*) are being asked to take part in a research study. This study is called An Approach to Linking Immune Function, *Susto*, and Andean Social Role Consonance. The study is being done by Blakely Brooks who is a doctoral student at the University of Alabama.

Mr. Brooks is being supervised by Dr. William W. Dressler, who is a professor of cultural anthropology.

This study is being partially paid for by a grant from Graduate Student Research and Travel Support Fund from the University of Alabama and University of Alabama Anthropology Department.

What is this study about?

This study is being done to find out the relationship between one's understanding of the model of Andean social roles and the illness of *susto*. The study will attempt to link the illness of *susto* with different social stresses.

Why is this study important--What good will the results do?

The results from this study are important because they will show that cultural elements frame individual perception. The study should also assist healers in diagnosis and treatment of illness.

Why have I been asked to take part in this study?

You have been asked to be in this study because you are over the age of 18, living in the Callejón de Huaylas valley of Peru, and live in a household that has or has not had someone in the household have *susto* in the last two years.

How many people besides me will be in this study?

About 120 other people will be in this study.

What will I be asked to do in this study?

If you decide to be in this study, you will be asked to do these things:

Interview 1-Answer questions related to Andean social role expectations from the Cultural Consonance in Social Role Expectations Research Instrument, answer questions about *susto* symptoms from the *Susto* Symptoms Checklist, and answer questions about the history of the Callejón de Huaylas valley.

Interview 2-Answer questions related to your general health from the General Health Questionnaire-12, answer questions about your levels physical and emotional well-being from the Short Form-36 questionnaire, and give a small blood spot.

How much time will I spend being in this study?

Being in this study will take about 2 hours. It should take about 65 minutes to complete the questions for interview 1. It should take about 45 minutes to complete the questions and give a blood spot from interview 2. In all, being in this study will take about 2 hours over two weeks.

Will I be paid for being in this study?

You will be paid \$ 5.00 or 15 soles for being in this study.

You will be paid \$1.50 or 5 soles for the completion of the first interview, and \$3.50 or 10 soles for the completion of interview 2. This mean that you could receive as little as \$1.50 or 5 soles and as much as \$5 or 15 soles.

Will being in this study cost me anything?

There will be no cost to you except for your time in completing the questionnaires.

Can the researcher take me out of this study?

The researcher may take you out of this study if he feels that the study appears to be upsetting you or something happens to you that means you no longer meet the study requirements.

What are the benefits (good things) that may happen to me if I am in this study?

There are no direct benefits to you from being in this study.

What are the benefits to scientists or society?

This study will help cultural anthropologists and physicians learn how to better help people with *susto*. Society will benefit from the study of *susto*, because the results from this study will suggest that when developing illness criteria the main focus should be on understanding how cultural elements impact individuals lives.

What are the risks (dangers or harm) to me if I am in this study?

1. Potential risk is physical harm incurred during blood spot collection. The risk to participants as has been shown to be minimal since the quantity of blood required for the blood spot is so small. The instrument that will be used for the pricking of participants fingers is the same instrument used by diabetics to check blood sugar levels.
2. Potential risk a is fingerprick site infection this will be addressed by the use of sterial latex gloves by the bloodspot collector. Each participants skin will be cleaned prior to the fingerprick with a sterile alcohol swab.
3. Potential risk associated with blood spot collection is continues bleeding from the fingerprick site. Each participant will have a sterile bandiad placed over the fingerprick site and will be monitored by the bloodspot collector for 10 minutes.

How will my confidentiality (privacy) be protected? What will happen to the information the study keeps on me?

Confidentiality will be protected by the use of ID numbers on all study documents, the limiting of access to the study documents to the investigator and his advisors, and the destruction of raw data after it has been transcribed or entered into a database.

What are the alternatives to being in this study? Do I have other choices?

The alternative to being in this study is not to participate.

What are my rights as a participant?

Taking part in this study is voluntary—it is your free choice. You may choose not to take part at all. If you start the study, you can stop at any time. Leaving the study will not result in any penalty or loss of any benefits you would otherwise receive.

The University of Alabama Institutional Review Board (IRB) is the committee that protects the rights of people in research studies. The IRB may review study records from time to time to be

sure that people in research studies are being treated fairly and that the study is being carried out as planned.

Who do I call if I have questions or problems?

If you have questions about the study right now, please ask them. If you have questions about the study later on, please call the investigator Blakely Brooks at (51)-43-422529 . If you have any questions about your rights as a research participant you may contact Ms. Tanta Myles, The University of Alabama Research Compliance Officer, at (205)-348-5152.

I have read this consent form. The study has been explained to me. I understand what I will be asked to do. I freely agree to take part in it. I will receive a copy of this consent form to keep.

Signature of Research Participant

Date

Investigator

Date

Appendix F: Institutional Review Board Approval

February 24, 2010

Office for Research
Institutional Review Board for the
Protection of Human Subjects

Blakely Brooks
Department of Anthropology
College of Arts & Sciences
The University of Alabama

THE UNIVERSITY OF
ALABAMA
RESEARCH

Re: IRB # 10-OR-057 "An Approach to Linking Immune Function, *Susto*, and Andean Social Role Consonance"

Dear Mr. Brooks:

The University of Alabama Institutional Review Board has granted approval for your proposed research

Your application has been given expedited approval according to 45 CFR part 46. Approval has been given under expedited review category 7 as outlined below:

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Your application will expire on February 23, 2011. If your research will continue beyond this date, complete the relevant portions of Continuing Review and Closure Form. If you wish to modify the application, complete the Modification of an Approved Protocol Form. When the study closes, complete the appropriate portions of FORM: Continuing Review and Closure.

Please use reproductions of the IRB approved informed consent form to obtain consent from your participants.

Should you need to submit any further correspondence regarding this proposal, please include the above application number.

Good luck with your research.

Sincerely,



Carpatato T. Myles, MSM, CIM
Director & Research Compliance Officer
Office for Research Compliance
The University of Alabama



152 Rose Administration Building
Box 870117
Tuscaloosa, Alabama 35487-0117
(205) 348-5152
FAX (205) 348-8882

Appendix A-Informed Consent Form

**UNIVERSITY OF ALABAMA
Informed Consent for a Research Study**

You (*and your child, spouse, partner, caregiver, etc.*) are being asked to take part in a research study. This study is called **An Approach to Linking Immune Function, *Susto*, and Andean Social Role Consonance**. The study is being done by Blakely Brooks who is a doctoral student at the University of Alabama.

Mr. Brooks is being supervised by Dr. William W. Dressler, who is a professor of cultural anthropology.

This study is being partially paid for by a grant from Graduate Student Research and Travel Support Fund from the University of Alabama and University of Alabama Anthropology Department.

What is this study about?

This study is being done to find out the relationship between one's understanding of the model of Andean social roles and the illness of *susto*. The study will attempt to link the illness of *susto* with different social stresses.

Why is this study important--What good will the results do?

The results from this study are important because they will show that cultural elements frame individual perception. The study should also assist healers in diagnosis and treatment of illness.

Why have I been asked to take part in this study?

You have been asked to be in this study because you are over the age of 18, living in the Callejón de Huaylas valley of Peru, and live in a household that has or has not had someone in the household have *susto* in the last two years.

How many people besides me will be in this study?

About 120 other people will be in this study.

What will I be asked to do in this study?

If you decide to be in this study, you will be asked to do these things:

Participate in a focus group answering questions about Andean culture and the local history of the Callejón de Huaylas valley.

UNIVERSITY OF ALABAMA IRB
CONSENT FORM APPROVED: 2-23-10
EXPIRATION DATE: 2-23-11

Perform an activity where you will sort different pictures and terms about Andean culture into different groups.

Interview 1-Answer questions related to Andean social role expectations from the Cultural Consonance in Social Role Expectations Research Instrument, answer questions about *susto* symptoms from the Susto Symptom Checklist, and answer questions about the history of the Callejón de Huaylas valley.

Interview 2-Answer questions related to your general health from the General Health Questionnaire-12, answer questions about your levels physical and emotional wellbeing from the Short Form-36 questionnaire, and give a small blood spot.

You will be asked to give a small blood spot. Your finger will be cleaned with an alcohol swab and then pricked with a diabetic finger prick machine. Five small drops of blood will be collected in a clear plastic tube and then your finger will have a small bandage put on it.

How much time will I spend being in this study?

Being in this study will take about 2 hours. It should take about 65 minutes to complete the questions for interview 1. It should take about 45 minutes to complete the questions and give a blood spot from interview 2. In all, being in this study will take about 2 hours over two weeks.

Will I be paid for being in this study?

You will be paid \$ 5.00 or 15 soles for being in this study.

You will be paid \$1.50 or 5 soles for the completion of the first interview, and \$3.50 or 10 soles for the completion of interview 2. This mean that you could receive as little as \$1.50 or 5 soles and as much as \$5 or 15 soles.

Will being in this study cost me anything?

There will be no cost to you except for your time in completing the questionnaires.

Can the researcher take me out of this study?

The researcher may take you out of this study if he feels that the study appears to be upsetting you or something happens to you that means you no longer meet the study requirements.

UNIVERSITY OF ALABAMA IRB
CONSENT FORM APPROVED: 2-23-10
EXPIRATION DATE: 2-23-11

What are the benefits (good things) that may happen to me if I am in this study?

There are no direct benefits to you from being in this study.

What are the benefits to scientists or society?

This study will help cultural anthropologists and physicians learn how to better help people with *susto*. Society will benefit from the study of *susto*, because the results from this study will suggest that when developing illness criteria the main focus should be on understanding how cultural elements impact individuals lives.

What are the risks (dangers or harm) to me if I am in this study?

1. Potential risk is physical harm incurred during blood spot collection. The risk to participants as has been shown to be minimal since the quantity of blood required for the blood spot is so small. The instrument that will be used for the pricking of participants fingers is the same instrument used by diabetics to check blood sugar levels.
2. Potential risk a is fingerprick site infection this will be addressed by the use of sterial latex gloves by the bloodspot collector. Each participants skin will be cleaned prior to the fingerprick with a sterile alcohol swab.
3. Potential risk associated with blood spot collection is continues bleeding from the fingerprick site. Each participant will have a sterile bandiad placed over the fingerprick site and will be monitored by the bloodspot collector for 10 minutes.

How will my confidentiality (privacy) be protected? What will happen to the information the study keeps on me?

Confidentiality will be protected by the use of ID numbers on all study documents, the limiting of access to the study documents to the investigator and his advisors, and the destruction of raw data after it has been transcribed or entered into a database.

What are the alternatives to being in this study? Do I have other choices?

The alternative to being in this study is not to participate.

What are my rights as a participant?

Taking part in this study is voluntary—it is your free choice. You may choose not to take part at all. If you start the study, you can stop at any time. Leaving the

UNIVERSITY OF ALABAMA IRB
CONSENT FORM APPROVED: 2-23-10
EXPIRATION DATE: 2-23-11

study will not result in any penalty or loss of any benefits you would otherwise receive.

The University of Alabama Institutional Review Board (IRB) is the committee that protects the rights of people in research studies. The IRB may review study records from time to time to be sure that people in research studies are being treated fairly and that the study is being carried out as planned.

Who do I call if I have questions or problems?

If you have questions about the study right now, please ask them. If you have questions about the study later on, please call the investigator Blakely Brooks at (51)-43-422529. If you have any questions about your rights as a research participant you may contact Ms. Tanta Myles, The University of Alabama Research Compliance Officer, at (205)-348-5152.

I have read this consent form. The study has been explained to me. I understand what I will be asked to do. I freely agree to take part in it. I will receive a copy of this consent form to keep.

Signature of Research Participant

Date

Investigator

Date

UNIVERSITY OF ALABAMA IRB
CONSENT FORM APPROVED: 2-23-10
EXPIRATION DATE: 2-23-11

Appendix A-Informed Consent Form

UNIVERSITY OF ALABAMA
Consentimiento informado para un estudio de investigación

A usted (y a su niño, esposo(a), pareja, cuidador, etcétera.) se le ha pedido participar en un estudio de investigación. Este estudio es titulado **An Approach to Linking Immune Function, Susto, and Andean Social Role Consonance (Un acercamiento hacia vincular la función inmune, susto y la concordancia de los papeles sociales andinos)**. Este estudio se está realizando por Benjamin Blakely Brooks, que es un estudiante doctoral a la Universidad de Alabama.

A Señor Brooks le está supervisando Dr. William W. Dressler, que es un profesor de antropología cultural.

Este estudio está pagado, en parte, por una subvención de la Graduate Student Research and Travel Support Fund de la Universidad de Alabama y de la facultad de antropología de la Universidad de Alabama.

¿De qué se trata este estudio?

Este estudio se hace para averiguar la relación entre el entendimiento que se tiene del modelo de papeles sociales andinos y la enfermedad de *susto*. El estudio intentará vincular la enfermedad de *susto* con diferentes estreses sociales.

¿Por qué es importante este estudio?—¿Qué de bien van a hacer los resultados?

Los resultados de este estudio son importantes porque mostrarán que la percepción del individuo se formula por los elementos culturales. También el estudio debe ayudar a los curanderos en el diagnóstico y tratamiento de la enfermedad.

¿Por qué me han pedido participar en este estudio?

Le han pedido participar en este estudio porque está de una edad mayor de los 18 años, está viviendo en el Callejón de Huaylas del Perú, y vive en un hogar en el que o sí ha estado alguien con *susto* en los últimos años o no ha estado nadie con *susto* en los últimos años.

¿Cuántas personas, además de yo, estarán en este estudio?

Alrededor de 120 otras personas estarán en el estudio.

UNIVERSITY OF ALABAMA IRB
CONSENT FORM APPROVED: 2-23-10
EXPIRATION DATE: 2-23-11

¿Qué me van a pedir que haga en este estudio?

Si decide estar en este estudio, se le pedirá hacer las siguientes cosas:

Entrevista 1-Contestar preguntas relacionadas a las expectativas de los papeles sociales andinos del instrumento de investigación de la concordancia cultural en las expectativas de los roles sociales, contestar preguntas acerca de los síntomas de susto de la lista de los síntomas de susto, y contestar preguntas sobre la historia del Callejón de Huaylas.

Entrevista 2-Contestar preguntas acerca de su salud general de la encuesta-12 de la salud general, contestar preguntas sobre sus niveles de bienestar físico así como emocional de la encuesta corta-36, y dar una gotita pequeña de sangre.

¿Cuánto tiempo gastará estando en este estudio?

Estar en este estudio tardará más o menos 2 horas. Debe tardar alrededor de 65 minutos para completar las preguntas de la entrevista 1. Debe tardar alrededor de 45 minutos para completar las preguntas y dar una gota de sangre durante la entrevista 2. En total, estar en este estudio tardará como 2 horas durante un plazo de dos semanas.

¿Me pagarán para estar en este estudio?

Le pagarán 5 dólares o 15 soles por estar en este estudio.

Le pagarán \$1,50 o 5 soles por al terminarse la primera entrevista, y \$3,50 o 10 soles al terminarse la entrevista 2. Esto quiere decir que podría recibir tan poco como \$1,50 o 5 soles o tanto como \$5 o 15 soles.

¿Me costará algo por star en este estudio?

No le cobrará nada a usted excepto por su tiempo para completar las encuestas.

Puede quitarme del estudio el investigador?

Sí; el investigador puede quitarle de este estudio si de repente él siente que el estudio le está afectando o si algo le pasa para que pierda los requisitos de estar en el estudio.

¿Cuáles son los beneficios (las cosas buenas) que me pueden ocurrir si estoy en este estudio?

No hay beneficios directos para usted si está en este estudio.

UNIVERSITY OF ALABAMA IRB
CONSENT FORM APPROVED: 2-23-10
EXPIRATION DATE: 2-23-11

¿Cuáles son los beneficios a los científicos o la sociedad?

Este estudio les ayudará a los antropólogos culturales y los médicos a aprender cómo ayudar mejor a las personas con *susto*. La sociedad se beneficiará del estudio de *susto* porque los resultados del estudio sugerirán que cuando se desarrolla el criterio de una enfermedad se debe enfocar principalmente en entender cómo los elementos culturales impactan las vidas individuales.

¿Cuáles son los riesgos (los peligros o daños) que podría correr si estoy en este estudio?

1. Un riesgo potencial es el daño físico que se pueda sufrir durante la extracción de la gota de sangre. Se ha demostrado que el riesgo a los participantes es mínimo ya que la cantidad de sangre requerida para la gota de sangre es muy pequeña. El dispositivo que se usará para pinchar los dedos de los participantes es el mismo del que se usan los diabéticos para revisar los niveles de azúcar en la sangre.
2. Un riesgo potencial es la infección del sitio del pinchazo del dedo; se tratará esto con el uso de guantes de látex estériles por la persona que extrae la gota de sangre. Se limpiará la piel de cada participante con un hisopo estéril de algodón antes de pinchar el dedo.
3. Un riesgo potencial que se da por la extracción de una gota de sangre es la pérdida de sangre continua del sitio del pinchazo en el dedo. Se pondrá una curita sobre el sitio del pinchazo y la persona que extrae la gota de sangre le observará al participante por 10 minutos.

¿Cómo se protegerá mi confidencialidad? ¿Qué pasará a la información que el estudio ha obtenido de mí?

Se protegerá la confidencialidad con el uso de números de identificación en todos los documentos del estudio, la delimitación de acceso a los mismos documentos al investigador y sus directores, y la destrucción de los datos primos después de que se han transcrito o entrado en una base de datos.

¿Cuáles son las alternativas a la de estar en este estudio? ¿Tengo otras opciones?

La alternativa de estar en el estudio es no participar.

¿Cuáles son mis derechos como participante?

UNIVERSITY OF ALABAMA IRB
CONSENT FORM APPROVED: 2-23-10
EXPIRATION DATE: 2-23-11

Participar en este estudio es voluntaria—es su libre opción. Puede elegir no participar. Si empiezas el estudio, puede dejarlo en cualquier momento. Dejar el estudio no resultará en cualquier pena ni la pérdida de cualquier beneficios que recibiría si no.

La Comité Institucional de Revisión de Protocolos (IRB) de la Universidad de Alabama protege los derechos de las personas en los estudios de investigación. La IRB puede reconsiderar los registros del estudio de vez en cuando para asegurar que a las personas en los estudios de investigación les estén tratando justamente y que el estudio se esté llevando como planeado.

¿A quién llamo si tengo preguntas o problemas?

Si tiene preguntas sobre el estudio ahora, por favor hágalas. Si tiene preguntas sobre el estudio más adelante, por favor llame al investigador Benjamin Blakely Brooks al (51)-43-422529. Si tiene cualquier pregunta sobre sus derechos sobre un participante de investigación puede contactar a Ms. Tanta Myles, la funcionaria de cumplimiento de la investigación de la Universidad de Alabama, al (205)-348-5152.

He leído este formulario de consentimiento informado. Me han explicado el estudio. Entiendo lo que me pedirán que haga. De mi propia voluntad participo en él. Recibiré una copia de este formulario de consentimiento para guardar.

Firma del participante de la investigación

Fecha

Investigador

Fecha

UNIVERSITY OF ALABAMA IRB
CONSENT FORM APPROVED: 2-23-10
EXPIRATION DATE: 2-23-11