

Emotional Distress Archival Analysis Report

Prepared by
Karon Cook, PhD

On behalf of the PROMIS
SCC Analysis Team

August, 2006

Summary of Emotional Distress Domain

SECONDARY DATA ANALYSES

GENERAL INTRODUCTION

The Statistical Coordinating (SCC) secondary analyses were conducted to provide information about the psychometric properties of existing measures in the five targeted PROMIS domains (physical function, emotional distress, fatigue, pain, social health). We were interested in evaluating whether sets of items putatively measuring the same thing were sufficiently unidimensional for IRT analyses and estimating item parameters (i.e., difficulty and discrimination) for the items in the measures. These analyses were intended to provide preliminary information about item characteristics and performance that could help guide decisions for the PROMIS field test. This report documents the results as they apply to the emotional distress domain.

The Statistical Coordinating Center conducted secondary analyses of existing databases. The purpose of these analyses was to gather information about the psychometric properties of existing measures in the five targeted PROMIS domains—physical function, emotional distress, fatigue, pain, and social/role functioning. The PROMIS Data Analysis Plan was used as a guide for these analyses. Specifically, we evaluated: 1) the factor structure of items purported to measure one of the PROMIS domains or subdomains, 2) local independence of item responses, 3) results obtained after calibrating subsets of item responses to one or more IRT models, and 4) the functioning of response options.

DATA

To date, five datasets have been analyzed that contained items identified by PROMIS' Emotional Distress domain team as relevant to the domain. For all datasets, item responses in the datasets were recoded so that higher numbers indicated better emotional health.

Cardiac Health Study (CHS)

This longitudinal, multi-center study monitored the cardiovascular health of 5201 individuals to estimate incidence and prevalence of coronary heart disease and stroke. In this analysis, we evaluated 19 items identified by the Emotional Distress domain team as pertinent. For the current study, only item responses from the baseline assessment were used (see Appendix A).

Digitalis Investigation Group (DIG)

This randomized double-blind placebo-controlled trial examined the effect of digoxin on mortality in 581 patients with heart failure and sinus rhythm. An exploratory factor analysis (EFA) of 67 survey items was conducted, including items from the CESD, the Spielberger State Anxiety Inventory, the Spielberger State Anger Inventory, the Minnesota Living with Heart Failure Questionnaire, and several items assessing global QOL. Twenty-six items were identified as pertaining to Emotional Distress subdomains: six depression, ten anger, and ten anxiety items (Appendix B).

Cooperative Study of Sickle Cell Disease (CSSCD)

This longitudinal study was funded by the National Heart, Lung and Blood Institute (NHLBI). The data analyzed for PROMIS were from the Infant Cohort portion of the study. Data (by proxy) were collected at 15 clinical centers. Data from 408 persons were used for the current analysis. The Emotional Distress domain team identified 32 items they thought pertinent to the domain. Responses to four of these items were not analyzed because they were not included in the obtained dataset. The remaining 28 items are reported in Appendix C.

World Health Organization Quality of Life-100 (WHOQOL-100)

WHOQOL-100 data from 442 individuals were obtained from the U.S. field center. The WHOQOL survey was developed as part of an international project that began with focus groups in 15 countries. The approximately 2,000 initial item set was reduced to a subset of 100 items that became the WHOQOL-100. For the current analysis, we focused on the five facets within the psychological domain of the WHOQOL-100: 1) positive feelings, 2) thinking, learning, memory and concentration, 3) self-esteem, 4) bodily image and appearance, and 5) negative feelings. These facets accounted for a total of 20 items (Appendix D).

Q-Score Project (Q-Score)

Responses to the 15 Q-Score items that were analyzed here were collected as the part of the NCI-funded Quality of Life Evaluation in Oncology (Q-Score) Project (R01 CA60068, 1994-1999; PI: David Cella, PhD). The objectives of the project included development of a standard metric for commonly-used measures of HRQOL. The 1,714 participants had a diagnosis of either cancer or HIV/AIDS. They were recruited from five Eastern Cooperative Oncology Group (ECOG) clinical sites (Rush-Presbyterian-St. Luke's Medical Center, Johns Hopkins Oncology Center, Medical College of Ohio, Fox Chase Cancer, and Robert H. Lurie Comprehensive Cancer Center of Northwestern University).

IRT ASSUMPTIONS

Emotional Distress Factor Structure

In the PROMIS domain hierarchy, the Emotional Distress domain is composed of four subdomains: depression, anxiety, anger/aggression, and substance abuse. None of the examined secondary datasets included items related to substance abuse, so this subdomain was not evaluated in the current analysis.

The existence of a general emotional distress, PROMIS item bank would benefit researchers. In studies in which a particular subdomain of emotional distress is not targeted but there is interest in the impact of an intervention on emotional health, a single, general measure of emotional distress would provide a practical and resource-sparing alternative to using multiple measures. We evaluated the factor structure of the emotional distress items that were included in the secondary database items. One focus of these analyses was to evaluate whether all items, across emotional distress subdomains, could be successfully represented by a unidimensional model. The results of our analyses were not hopeful in this regard. Exploratory factor analyses were consistent in suggesting more than one factor, and confirmatory factor analyses based on unidimensional models

exhibited very poor fit. The content representation of the items varied by dataset, and this was reflected in the factors that emerged.

In the DIG analyses, three factors were suggested: 1) depressive symptoms and worry, 2) anxiety and 3) anger. The bifactor model revealed factor loadings on the general factor that were generally similar to the loadings on the unidimensional model. However, loadings on the specific factors were non-trivial, indicating some meaningful unique variance.

Not unexpectedly, the five WHOQOL facets (positive feelings; thinking, learning, memory and concentration; self-esteem; bodily image and appearance; negative feelings) proved not sufficiently unidimensional for IRT analyses. Restricting the analyses to subsets of items representing positive feelings and negative feelings facets revealed better fit to a one-factor confirmatory categorical model in terms of standard indicators of practical fit (CFI), but the root mean square error of approximation index was still high.

The CSSCD data were thought best represented by three factors. These were: depressive symptoms, emotional/social anxiety, and somatic symptom anxiety.

The CHS items were a mixed bag, classified by the domain team as anxiety only (1 item), depression only (6 items), anxiety/depression (3 items), or positive psychological (2 items). The fit obtained with all of these items combined was very poor. Dropping the two positive psychological items improved fit, but did not bring fit to within conventional fit standards.

A principal components analysis was conducted with the 15 Q-Score items. The 1st component accounted for 50% of the variance and the 2nd component for an additional 10%. Three RAND Role-Emotional items loaded more strongly on the 2nd component than the first. A confirmatory factor analyses (one-factor model) was run before and after deleting the three Role-Emotional items. The fit was better with the items dropped, but the root mean square error was still large (0.15, or 0.09 with adjustment for non-normality).

Local Independence

Local dependency was evaluated by examining the residual correlations obtained with a one-factor confirmatory model. For the datasets for which it was reported, some local dependency was observed between item pairs. For example, in the CHS dataset, two percent of all possible item pairs had residual correlations that exceeded 0.20; four percent exceeded 0.10. In the combined WHOQOL-100 dataset, there were several large residuals; 8 residuals were 0.28 or higher. For an 18-item and a 15-item subset, only one residual was 0.28 or larger. The largest residual for an 8-item subset was 0.25. The highest residual correlations in the Q-Score data were found among the pairs of RAND role-emotional items (0.36 to 0.41).

CALIBRATION TO IRT MODELS

In each dataset analysis, responses for a reduced item set were calibrated to one or more IRT models. The WHOQOL-100 data were fit to both the graded response model and a

one-parameter model. Based on a log-likelihood comparison, the difference in fit between these two models was statistically significant ($p < .001$).

Item Slopes

There was substantial variance among slope parameter estimates within and across datasets. This finding suggests an explanation for the better statistical fit obtained when the WHOQOL-100 data were modeled using a two- versus a one-parameter model (since the one-parameter assumes equal discrimination). The slopes for the items of the 18 item subset of the WHOQOL-100 ranged from 0.76 to 3.25. For the depression/anxiety CHS item subset, the range was 0.56 to 1.5. For the CSSCD data combined, the range was 0.27 to 1.15. In the DIG analysis, the depression item subset had slopes that ranged from 0.78 to 3.04; the anxiety item slopes ranged from 1.44 to 3.12, and the anger item slopes ranged from 2.44 to 5.59.

Item Difficulties

Across datasets, item difficulties were best targeted toward lower ranges of theta, that is, in the range of poorer emotional health. This is not surprising given the targets for such measures often are clinical samples. It could be argued that there is no particular need to make fine discriminations among persons who are experiencing little emotional distress. However, for PROMIS, we are developing an item bank for computer adaptive assessment of populations that may have large ranges of the traits of interest. It will be preferable, therefore, to extend the effective measurement range of the PROMIS bank beyond that observed in the evaluated item sets. A method that has been used to extend the measurement range of health outcome scales is to include items that target both positive and negative aspects of the construct (e.g. emotional *health* as well as emotional *distress*). However, positive and negative aspects of emotional health, rather than defining two ends of a single continuum, may represent two different, though correlated, continua.

Response Category Functioning

Another matter of substantial concern in the development of the PROMIS item banks is the functioning of response categories. One approach to evaluating the effectiveness of response categories is to graph item category characteristic functions (CCF's). These curves represent the probability of a given response (the y-axis) with respect to the level of the trait being measured (the x-axis). When response categories are functioning well, there will be, for each category, some point along the trait continuum at which that category is the most likely response.

CCF's were plotted for the items of three of the datasets. In the CSSCD and the CHS datasets, some categories were collapsed before the item responses were calibrated. For this reason, we could not compare the relative functioning of all presented response options. However, the reasons the categories had to be collapsed (because of extreme skewness or non-monotonicity) are themselves indicative of poor category functioning. For the CSSCD items, though there were only three response categories ("very true or often true," "somewhat or sometime true," and "not true"), it was necessary to dichotomize 4 of the 28 items. For only 5 of the remaining 24 was each of the three categories the most probable response for some level of the trait. For only one item, "clings to adults or too dependent," were there clear distinctions among all three

categories. The data as recoded (with the collapsed categories) were used for all subsequent analyses.

In the other data sets, we also observed this item-level specificity in how well response categories functioned. In the CHS anxiety/depression item subset, four of ten items met the criterion of every response category being the most probable response for some range of theta. However, with all but three of the items, for one of the three categories this range was extremely small. Only for the item, “I was bothered by things that usually don't bother me,” did all four response categories discriminate well.

The response categories of the WHOQOL-100 database worked well for the majority of the 20 items that we examined. There was some point along the trait continuum when each category had the highest probability of being chosen. Exceptions to this finding included the “not at all” response for four questions: 1) “How much do you enjoy life,” 2) “How much do you experience positive feelings in your life,” 3) “How well are you able to concentrate,” and 4) “How much do you value yourself?” In addition, the “very poor” to “very good” response scale did not perform well for the item, “How would you rate your memory?” Finally, the “very dissatisfied” to “very satisfied” scale did not work well for two items: 1) “How satisfied are you with your ability to learn new information” and 2) “How satisfied are you with your ability to make decisions?”

SUMMARY OF FINDINGS

What we could learn about the factor structure of the Emotional Distress domain depended on what items happened to be included in the datasets we studied. None of the studies from which the datasets were obtained was designed specifically to assess emotional functioning. However, our results were univocal in suggesting that emotional distress cannot be adequately modeled as a unidimensional construct. Even at the subdomain level (e.g. depression, anxiety) we often did not obtain fit consistent with conventional standards for model building. This finding suggests that the question of what is “good enough” fit for IRT modeling will be a question of particular relevance as PROMIS develops its item banks.

Another challenge in item bank development will be the need to extend the effective measurement range of the items. It is notoriously difficult to discriminate well on the “good outcome” end of health outcome continua. One possibility that should be explored is the use of items that target emotional health as well as emotional distress. Combining emotional health and distress items, however, will make it more difficult to get good fit to a unidimensional model. The relative advantages of good fit and effective measurement range will need to be considered.

We evaluated the response categories based on the criterion that every response category should be the most probably response for some range of theta. Based on this standard, we concluded that the number of response options offered often exceeded the number of response options that actually discriminated among levels of the trait. However, our chosen criterion should be validated with respect to the practical impact of having more or fewer response options.

APPENDIX A: Items from the Cardiac Health Study

Item	Item Stem	Item Context	Response Categories
BOTHER	I was bothered by things that usually don't bother me. How often did you feel this way?	During the past week...	0=RARELY OR NONE OF THE TIME (LESS THAN 1 D 1=SOME OR A LITTLE OF THE TIME (1 TO 2 DAYS) 2=A MODERATE AMOUNT OF TIME (3 TO 4 DAYS) 3=MOST OF THE TIME 9=REFUSED OR DO NOT KNOW
CLOSE	How many relatives do you feel close to? That is, how many of them do you feel at ease with, can you talk to about private matters, or can you call on for help?		0=NONE 1=ONE 2=TWO 3=THREE OR FOUR 4=FIVE TO EIGHT 5=NINE OR MORE 9=REFUSED TO ANSWER
CLSFRD	How many close friends do you have? That is, friends with whom you feel at ease, can talk to about private matters or can call on for help.		0=NONE 1=ONE 2=TWO 3=THREE OR FOUR 4=FIVE TO EIGHT 5=NINE OR MORE 9=REFUSED TO ANSWER
DCSN3	When you have an important decision to make, do you have someone you can talk to about it?		0=NO 1=SELDOM 2=SOMETIMES 3=OFTEN 4=VERY OFTEN 5=ALWAYS 9=REFUSED TO ANSWER
DEPRES	I felt depressed.	During the past week...	0=RARELY OR NONE OF THE TIME (LESS THAN 1 D 1=SOME OR A LITTLE OF THE TIME (1 TO 2 DAYS) 2=A MODERATE AMOUNT OF TIME (3 TO 4 DAYS) 3=MOST OF THE TIME 9=REFUSED OR DO NOT KNOW
EFFORT	I felt that everything I did was an effort.	During the past week...	0=RARELY OR NONE OF THE TIME (LESS THAN 1 D 1=SOME OR A LITTLE OF THE TIME (1 TO 2 DAYS) 2=A MODERATE AMOUNT OF TIME (3 TO 4 DAYS) 3=MOST OF THE TIME 9=REFUSED OR DO NOT KNOW
FEAR	I felt fearful.	During the past week...	0=RARELY OR NONE OF THE TIME (LESS THAN 1 D 1=SOME OR A LITTLE OF THE TIME (1 TO 2 DAYS) 2=A MODERATE AMOUNT OF TIME (3 TO 4 DAYS) 3=MOST OF THE TIME 9=REFUSED OR DO NOT KNOW
FEEL	How do you feel about life as a whole?		1=DELIGHTED 2=PLEASED 3=MOSTLY SATISFIED 4=MOSTLY DISSATISFIED 5=UNHAPPY 6=TERRIBLE 9=REFUSED TO ANSWER
FUTURE	I felt hopeful about the future.	During the past week...	0=MOST OF THE TIME 1=A MODERATE AMOUNT OF TIME (3 TO 4 DAYS) 2=SOME OR A LITTLE OF THE TIME (1 TO 2 DAYS) 3=RARELY OR NONE OF THE TIME (LESS THAN 1 D 9=REFUSED OR DO NOT KNOW

APPENDIX A, continued: Items from the Cardiac Health Study

Item	Item Stem	Item Context	Response Categories
GETGO	I could not get going.	During the past week...	0=RARELY OR NONE OF THE TIME (LESS THAN 1 D 1=SOME OR A LITTLE OF THE TIME (1 TO 2 DAYS) 2=A MODERATE AMOUNT OF TIME (3 TO 4 DAYS) 3=MOST OF THE TIME 9=REFUSED OR DO NOT KNOW
HAPPY	I was happy.	During the past week...	0=MOST OF THE TIME 1=A MODERATE AMOUNT OF TIME (3 TO 4 DAYS) 2=SOME OR A LITTLE OF THE TIME (1 TO 2 DAYS) 3=RARELY OR NONE OF THE TIME (LESS THAN 1 D 9=REFUSED OR DO NOT KNOW
LONELY1	I felt lonely	During the past week...	0=RARELY OR NONE OF THE TIME (LESS THAN 1 D 1=SOME OR A LITTLE OF THE TIME (1 TO 2 DAYS) 2=A MODERATE AMOUNT OF TIME (3 TO 4 DAYS) 3=MOST OF THE TIME 9=REFUSED OR DO NOT KNOW
LONELY2	If I feel lonely, there are several people I can talk to.		1=DEFINITELY TRUE 2=PROBABLY TRUE 3=PROBABLY FALSE 4=DEFINITELY FALSE 9=REFUSED TO ANSWER
PROBS	When I need suggestions on how to deal with a personal problem, I know someone I can turn to.		1=DEFINITELY TRUE 2=PROBABLY TRUE 3=PROBABLY FALSE 4=DEFINITELY FALSE 9=REFUSED TO ANSWER
SATISF	How satisfied are you with the meaning and purpose of your life?		1=EXTREMELY SATISFIED 10=EXTREMELY DISSATISFIED 99=RESUSED TO ANSWER
SLEEP	My sleep was restless.	During the past week...	0=RARELY OR NONE OF THE TIME (LESS THAN 1 D 1=SOME OR A LITTLE OF THE TIME (1 TO 2 DAYS) 2=A MODERATE AMOUNT OF TIME (3 TO 4 DAYS) 3=MOST OF THE TIME 9=REFUSED OR DO NOT KNOW
TALK	I often meet or talk with family or friends.		1=DEFINITELY TRUE 2=PROBABLY TRUE 3=PROBABLY FALSE 4=DEFINITELY FALSE 9=REFUSED TO ANSWER
TROUBLE	I had trouble keeping my mind on what I was doing.	During the past week...	0=RARELY OR NONE OF THE TIME (LESS THAN 1 D 1=SOME OR A LITTLE OF THE TIME (1 TO 2 DAYS) 2=A MODERATE AMOUNT OF TIME (3 TO 4 DAYS) 3=MOST OF THE TIME 9=REFUSED OR DO NOT KNOW
TRUST	There is at least one person I know whose advice I really trust.		1=DEFINITELY TRUE 2=PROBABLY TRUE 3=PROBABLY FALSE 4=DEFINITELY FALSE 9=REFUSED TO ANSWER

APPENDIX B: Digitalis Investigation Group Database Items

Item Context	Item	Response Scale
Would you say IN THE LAST WEEK:	<ul style="list-style-type: none"> • You were bothered by things that usually don't bother you • You did not feel like eating or your appetite was poor • You felt sad • You felt fearful • You were happy • You felt lonely 	<p>0 = Rarely (less than 1 day)</p> <p>1 = Some of the time (1 - 2 days)</p> <p>2 = Moderate amount of the time (3 - 4 days)</p> <p>3 = Most of the time (almost every day)</p> <p>9 = Don't know or refused</p>
Please read each statement and then code the answer that indicates how you feel RIGHT NOW AT THIS MOMENT.	<ul style="list-style-type: none"> • I felt calm • I am tense • I feel at ease • I am presently worrying over possible misfortunes • I feel nervous • I am jittery • I am relaxed • I am worried • I feel steady • I feel frightened • I am furious • I feel like banging on the table • I feel angry • I feel like yelling at somebody • I feel like breaking things • I am mad • I feel irritated • I feel like biting someone • I am burned up • I feel like swearing 	<p>1 = Not at all</p> <p>2 = Somewhat</p> <p>3 = Moderately so</p> <p>4 = Very much so</p>

APPENDIX C: Items from the Cooperative Study of Sickle Cell Disease

Item Stem	Response Scale
Argues a lot	2 = very true or often true 1 = somewhat or sometimes true 0 = not true
Bites fingernails	2 = very true or often true 1 = somewhat or sometimes true 0 = not true
Can't concentrate, can't pay attention for long	2 = very true or often true 1 = somewhat or sometimes true 0 = not true
Can't get his/her mind off certain thoughts; obsessions	2 = very true or often true 1 = somewhat or sometimes true 0 = not true
Can't sit still, restless or hyperactive	2 = very true or often true 1 = somewhat or sometimes true 0 = not true
Clings to adults or too dependent	2 = very true or often true 1 = somewhat or sometimes true 0 = not true
Complains of loneliness	2 = very true or often true 1 = somewhat or sometimes true 0 = not true
Confused or seems to be in a fog	2 = very true or often true 1 = somewhat or sometimes true 0 = not true
Constipated, doesn't move bowels	2 = very true or often true 1 = somewhat or sometimes true 0 = not true
Cries a lot	2 = very true or often true 1 = somewhat or sometimes true 0 = not true
Easily jealous	2 = very true or often true 1 = somewhat or sometimes true 0 = not true
Fears certain animals, situations, or places, other than school	2 = very true or often true 1 = somewhat or sometimes true 0 = not true
Fears going to school	2 = very true or often true 1 = somewhat or sometimes true 0 = not true
Feels dizzy or lightheaded	2 = very true or often true 1 = somewhat or sometimes true 0 = not true
Feels too guilty	2 = very true or often true 1 = somewhat or sometimes true 0 = not true

APPENDIX C, continued: Items from the Cooperative Study of Sickle Cell Disease

Item Stem	Response Scale
Feels worthless or inferior	2 = very true or often true 1 = somewhat or sometimes true 0 = not true
Gets hurt a lot, accident-prone	2 = very true or often true 1 = somewhat or sometimes true 0 = not true
Nervous movements or twitching	2 = very true or often true 1 = somewhat or sometimes true 0 = not true
Physical problems without known medical cause: Nausea, feels sick	2 = very true or often true 1 = somewhat or sometimes true 0 = not true
Self-conscious or easily embarrassed	2 = very true or often true 1 = somewhat or sometimes true 0 = not true
Talks or walks in sleep	2 = very true or often true 1 = somewhat or sometimes true 0 = not true
Too fearful or anxious	2 = very true or often true 1 = somewhat or sometimes true 0 = not true
Too shy or timid	2 = very true or often true 1 = somewhat or sometimes true 0 = not true
Unhappy, sad, or depressed	2 = very true or often true 1 = somewhat or sometimes true 0 = not true
Uses drugs for nonmedical purposes (don't include alcohol or tobacco)	2 = very true or often true 1 = somewhat or sometimes true 0 = not true
Withdrawn, doesn't get involved with others	2 = very true or often true 1 = somewhat or sometimes true 0 = not true
Worries	2 = very true or often true 1 = somewhat or sometimes true 0 = not true
Would rather be alone than with others	2 = very true or often true 1 = somewhat or sometimes true 0 = not true

APPENDIX D: World Health Organization Quality of Life-100 Items

Item Stem	Response Scale
How much do you enjoy life?	1 = Not at all 2 = A little 3 = A moderate amount 4 = Very much 5 = An extreme amount
Do you generally feel content?	1 = Never 2 = Seldom 3 = Quite often 4 = Very often 5 = Always
How positive do you feel about the future?	1 = Not at all 2 = A little 3 = A moderate amount 4 = Very much 5 = An extreme amount
How much do you experience positive feelings in your life?	1 = Not at all 2 = A little 3 = A moderate amount 4 = Very much 5 = An extreme amount
How would you rate your memory?	1 = Very poor 2 = Poor 3 = Neither poor nor good 4 = Good 5 = Very good
How well are you able to concentrate?	1 = Not at all 2 = Slightly 3 = Moderately 4 = Very 5 = Extremely
How satisfied are you with your ability to learn new information?	1 = Very dissatisfied 2 = Dissatisfied 3 = Neither satisfied nor dissatisfied 4 = Satisfied 5 = Very satisfied
How satisfied are you with your ability to make decisions?	1 = Very dissatisfied 2 = Dissatisfied 3 = Neither satisfied nor dissatisfied 4 = Satisfied 5 = Very satisfied
How much do you value yourself?	1 = Not at all 2 = A little 3 = A moderate amount 4 = Very much 5 = An extreme amount

APPENDIX D, continued: World Health Organization Quality of Life-100 Items

Item Stem	Response Scale
How much confidence do you have in yourself?	1 = Not at all 2 = A little 3 = A moderate amount 4 = Very much 5 = An extreme amount
How satisfied are you with yourself?	1 = Very dissatisfied 2 = Dissatisfied 3 = Neither satisfied nor dissatisfied 4 = Satisfied 5 = Very satisfied
How satisfied are you with your abilities?	1 = Very dissatisfied 2 = Dissatisfied 3 = Neither satisfied nor dissatisfied 4 = Satisfied 5 = Very satisfied
Are you able to accept your bodily appearance?	1 = Not at all 2 = A little 3 = Moderately 4 = Mostly 5 = Completely
Do you feel inhibited by your looks?	1 = Extremely 2 = Very 3 = Moderately 4 = Slightly 5 = Not at all
Is there any part of your appearance which makes you feel	1 = An extreme amount 2 = Very much 3 = A moderate amount 4 = A little 5 = Not at all
How satisfied are you with the way your body looks?	1 = Very dissatisfied 2 = Dissatisfied 3 = Neither satisfied nor dissatisfied 4 = Satisfied 5 = Very Satisfied
How often do you have negative feelings, such as blue mood, despair, anxiety, depression	1 = Always 2 = Very often 3 = Quite often 4 = Seldom 5 = Never
How worried do you feel?	1 = Extremely 2 = Very 3 = Moderately 4 = Slightly 5 = Not at all

APPENDIX D, continued: World Health Organization Quality of Life-100 Items

Item Stem	Response Scale
How much do any feelings of sadness or depression bother you?	1 = An extreme amount 2 = Very much 3 = A moderate amount 4 = A little 5 = Not at all
How much do any feelings of depression bother you?	1 = An extreme amount 2 = Very much 3 = A moderate amount 4 = A little 5 = Not at all

APPENDIX E: Q-SCORE Emotional Health Items

Item Context	Item	Response Categories
<i>How much does this apply to you?</i>	I frequently feel anxious (CARES)	0. Not at all 1. A little 2. A fair amount 3. Much 4. Very much
<i>During the past week:</i>	<ul style="list-style-type: none"> • Did you feel tense? (EORTC) • Did you worry? (EORTC) • Did you feel irritable? (EORTC) • Did you feel depressed? (EORTC) 	1. Not at all 2. A little 3. Quite a bit 4. Very much
<i>Please indicate how true each statement has been for you during the past 7 days.</i>	<ul style="list-style-type: none"> • I feel sad. (FACT) • I feel nervous. (FACT) 	1. Yes 2. No
<i>During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?</i>	<ul style="list-style-type: none"> • Cut down on the amount of time you spent on work or other activities? (RAND) • Accomplish less than you would like? (RAND) • Didn't do work or other activities as carefully as usual? (RAND) 	1. Yes 2. No
<i>These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to you way you have been feeling. How much of the time during the past 4 weeks, . . .</i>	<ul style="list-style-type: none"> • Have you been a very nervous person? (RAND) • Have you felt so down in the dumps that nothing could cheer you up? (RAND) • Have you felt calm and peaceful? (RAND) • Have you felt downhearted and blue? (RAND) • Have you been a happy person? 	1. All of the time 2. Most of the time 3. A good bit of the time 4. Some of the time 5. A little of the time 6. None of the time