

# **An Examination of the 3-factor Model and Structural Invariance across Racial/Ethnic Groups for the FACIT-Sp: A Report from the American Cancer Society's Study of Cancer Survivors-II (SCS-II)**

Patricia Murphy, Andrea Canada, George Fitchett  
Rush University Medical Center

Kevin Stein, Kenneth Portier, Corinne Crammer,  
American Cancer Society

Amy Peterman

University of North Carolina at Charlotte

 RUSH UNIVERSITY  
MEDICAL CENTER

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# About the FACIT-Sp

**The Functional Assessment of Chronic Illness Therapy-Spiritual Well-Being Scale (FACIT-SP)** was developed and validated with a racially mixed sample of 1,617 oncology (breast, colon, lung or head and neck) and HIV patients. (Peterman, et al., 2002).

# The Two Factor Model

An exploratory factor analysis revealed three factors: **Meaning/Peace, Faith,** and two **negatively worded items.** Because these two items were reverse-worded counterparts related to peace and purpose in life, they were assigned to the factor **Meaning/Peace.** The final instrument has been used with two factors.

# Another Look

- A recent study hypothesized that research might be more informative if **Meaning**, a **cognitive** dimension of religious/spiritual well-being (R/SWB) and **Peace**, an **affective** dimension R/SWB) were considered as separate factors.
- In a sample of 240 female cancer survivors Confirmatory Factor Analysis (CFA) demonstrated that a 3 factor model with factors for **Meaning**, **Peace**, and **Faith** fit the data better.

(Canada, Murphy, Fitchett, Peterman, & Schover, 2008).

# Limitations of that Study

The sample was, primarily, young, European American women, who were married, highly educated, and from the 'Bible belt' region of the United States.

There were only 240 women in the sample.



# Aims of Our Study

- Examine the 3 factor model in a larger, more diverse sample;
- Assess the stability of the 3 factor model across racial/ethnic groups;
- Test an item generated by the American Cancer Society.



- Data about 8,805 cancer survivors and quality of life collected by the American Cancer Society based on Cancer Registry information and Surveys (ACS-SCSII).
- The data is cross-sectional. It was collected from 11 states. Respondents were either 2-years, 5-years, or 10 years post diagnosis.

# Some Demographics

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Age	Range	M	(SD)
	24 - 100 yrs	<b>67.2 yrs.</b>	<b>(11.8)</b>
Gender	Female	4,876	<b>56 %</b>
Ethnicity	Caucasian	<b>6,827</b>	78 %
	African-American	<b>914</b>	10 %
	Hispanic	<b>664</b>	8 %
	Other	<b>400</b>	5 %

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N=8,805

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Income*	< \$30,000	28 %
	\$30,000-\$74,999	36 %
	> \$75,000	16 %
Education*	High School or less	37 %
	Some college or trade school	26 %
	College Degree or more	32 %

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\*Less than 100% of cases supplied data.

# Diagnostic Information

Type	Breast	2,800	32%
	Prostate	2,147	24%
	Colorectal	1,855	21%
	Bladder	403	6%
	Uterine	703	8%
	Skin Melanoma	738	8%
		Mean (SD)	
Time Since Dx	1.7 – 13 yrs	6.7 yrs (3.3)	

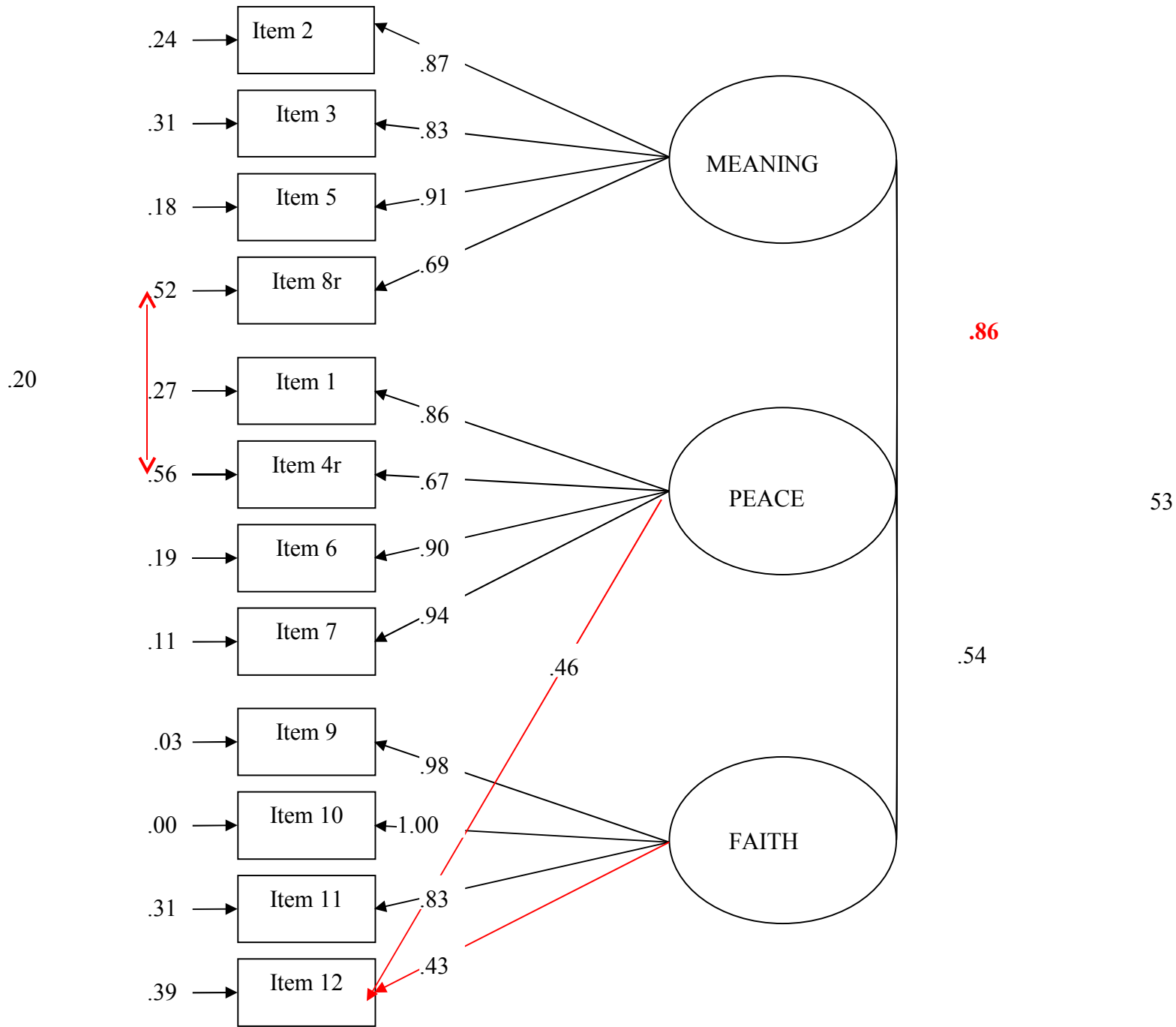
# Items in FACIT-SP

- Peace
  - Item 1 I feel peaceful.
  - Item 4 I have trouble feeling peace of mind.
- Meaning
  - Item 5 I feel a sense of purpose in my life.
- Faith
  - Item 9 I find comfort in my faith or spiritual beliefs.
  - Item 12 I know that whatever happens with my illness, things will be OK.

## Structural Equation Modeling

- Does the hypothesized model fit the data?
- Two examples of measures of fit - residual between hypothesized associations and actual associations
  - Chi-square (big is bad)
  - Root Mean Square Error of Approximation (RMSEA)  
 $\leq .06$  is good,  $\leq .08$  is adequate





# Comparison of Models

Model	$\chi^2$	Significance of Decrease in $\chi^2$	RMSEA
2 Factors	2690.67		.075
3 Factors	2115.74	$p < .001$	.068
Final Model	989.64	$p < .001$	.047

For large samples,  $\chi^2$  is not a good measure of fit (Hu & Bentler, 1999). RMSEA  $\leq$  .06 is good,  $\leq$  .08 is adequate.

## Hierarchical Regression of Mental Component Score of SF-36 on Meaning and Peace

	Model 1	Model 2		Model 1	Model 2
	$\beta$	$\beta$		$\beta$	$\beta$
<b>MCS</b>					
Meaning	.55	.18	Peace	<b>.66</b>	<b>.54</b>
Peace		.54	Meaning		.18
Adjusted $R^2$ ( $\Delta R^2$ )	.30	<b>.46(.15)</b>		<b>.44</b>	<b>.46(.02)</b>

Note: For all  $\beta$ s,  $p < .001$ ; for  $F$  change for all  $\Delta R^2$ ,  $p < .001$

# Utility of 3 Factor Model

In another sample from the American Cancer Society (N=5,304), Meaning was positively associated with Fear of Recurrence (FOR) whereas Peace was negatively associated with FOR.

Crammer, Chiewkwei, & Stein, 2009  
(View poster at this meeting)

# Testing Invariance

- Split the data White, Black, Hispanic, Other
- Test Invariance
  - A model where the parameters (correlation of factors and correlation of each item with its specific factor) are equal for each of the four groups;
  - Test a model where each group is allowed to have its own parameters.
- Is  $\chi^2$  for the model with equal parameters worse or the same?

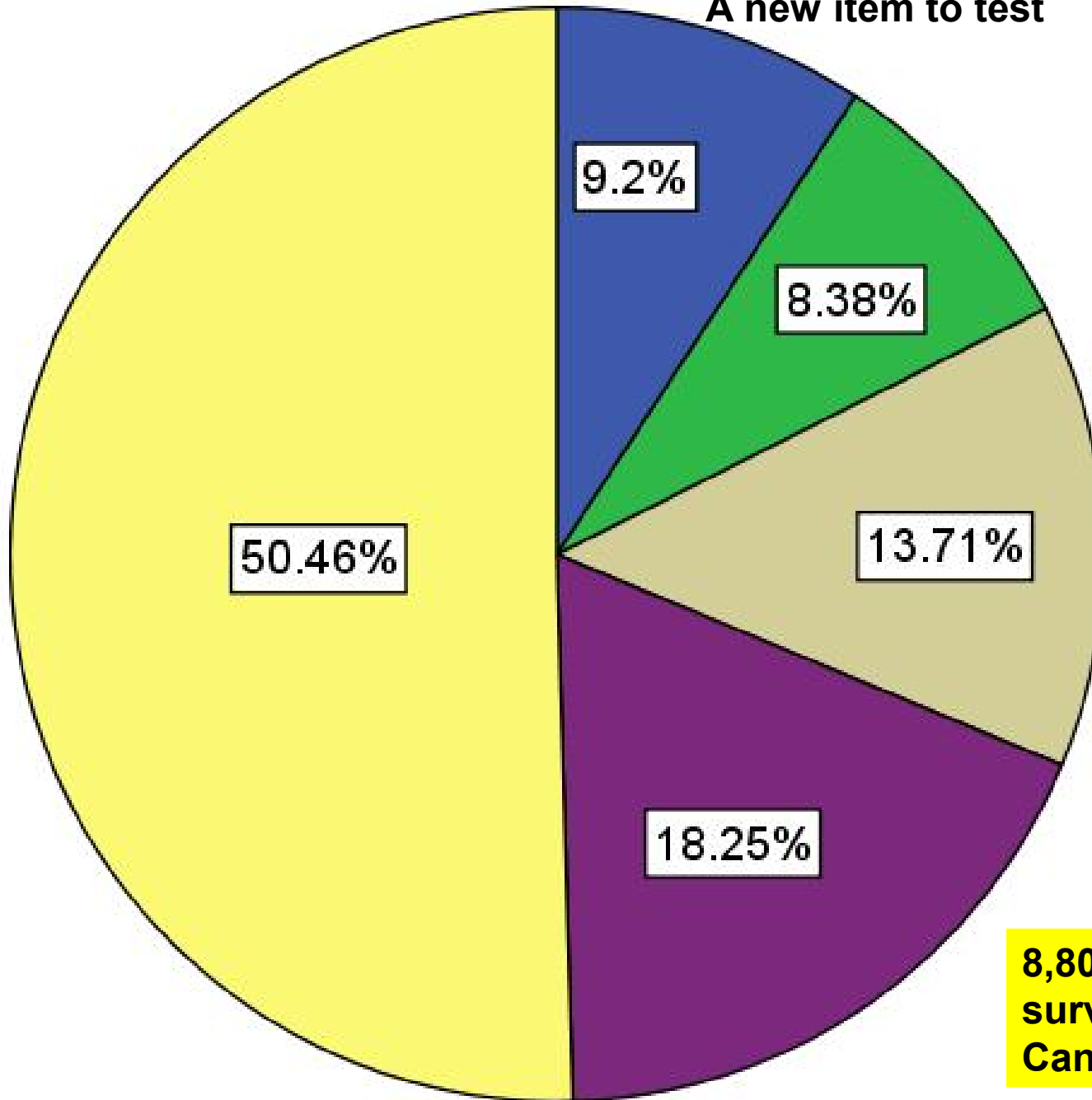
- Model with equal parameters
  - Chi-square = 4,808.96
- Model with parameters allowed to vary
  - Chi-square = 2,368.42
- That is a big (and significant) difference. Requiring the racial/ethnic groups to have equal parameters does not work. Something is happening.

- What were some of the differences
  - The strength of the correlation of factors differed.
  - Reverse worded items seemed to have lower coefficients within the non-white groups, as did some other items.
  - I feel a sense of harmony within myself – for Hispanics – appeared to have a lower coefficient.
- What to do?
  - Leave out the reverse worded items
  - Use separate cluster groups for the different races to explore the wording of the items and their meaning.

## A new item to test

My faith or spirituality has helped me through my cancer experience

- Not at all
- A little bit
- Somewhat
- Quite a bit
- Very much



**8,805 respondents to a survey by the American Cancer Society**

- Remember item 12? It loaded on Faith and Peace.
- Replacing item 12 with the new ACS item eliminates that problem and provides a better fit.
- The nicest model removes the negatively worded items and uses the ACS item instead of item 12.

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- Full article available on-line at *Psycho-Oncology* on Early View
- Patricia\_Murphy@rush.edu