

Author's response to reviews

Title: Psychosocial Correlates of Dietary Fat Intake in African American Adults: A cross-sectional study

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Author's response to reviews: see over

Dear Nutrition Journal Editors,

We are resubmitting our revised manuscript entitled, "Psychosocial Correlates of Dietary Fat Intake in African American Adults: A Cross-Sectional Study." We appreciate the thorough review and feel the revised manuscript is stronger than the original. We believe this manuscript would be of interest to readers involved with healthy eating interventions, especially those that target African Americans.

All the authors have participated substantially in the conception and design of this work, the analysis of the data, and/or the writing of the manuscript. All have reviewed the final version of the manuscript submitted for publication and approved it for publication.

Neither this manuscript nor another one with substantially similar content under our authorship has been published or is being considered for publication elsewhere. This study received human subjects research approval from the UNC Biomedical Institutional Review Board and was compliant with HIPAA guidelines.

I will continue to handle all correspondence regarding this manuscript. I have recently changed affiliations. Please note my new address and contact information.

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Thank you reconsidering this manuscript as a research article.

Best Regards,
Joanne

Reviewer 1

Title: Psychosocial Correlates of Dietary Fat Intake in African American Adults: A cross-sectional study

Reviewer's report:

Understanding the psychosocial correlates of nutrition behavior among underserved and at-risk populations is a priority. Social cognitive theory is especially useful as it accommodates diverse settings, cultures, and individuals. The authors have access to a large psychosocial and nutritional dataset from a random sample of African American adults that has the potential for furthering the understanding of fat intake in this population. The methodology used had limitations but enabled the authors to reach a large and randomly selected sample adding considerable strength to this cross-sectional study. Although the version of social cognitive theory that informed the construction of the survey they administered is somewhat obscure – I could find no other research studies using it listed in a PSYCHINFO search – the items clearly tap familiar social cognitive constructs. The major weakness is the brevity of the survey.

My major concern with the paper is that even though the PRECEDE-PROCEED “model” is touted as appropriate and fitting for this population, the authors generally ignore the model and instead focus on individual psychosocial variables. The brief description in the paper suggests that the PRECEDE-PROCEED model posits that higher self-efficacy will lead to healthier behavior which will garner positive outcomes (incentives). One assumes that greater knowledge (an enabler) would also lead to higher self-efficacy healthier behavior, but perhaps only if coupled with beliefs/attitudes. Did this configuration of influences hold in the sample; was higher self-efficacy associated with more positive beliefs, higher incentives and better knowledge?

We share the Reveiwer’s interest in how these variables interact and their relationship to healthy eating behavior. We suspected that many of the factors examined might be at least modestly correlated. Thus, we included the other factors within each category (predisposing, reinforcing, enabling) in the models as an attempt to tease apart the relationship of each of these factors with fat intake (Table 3). Furthermore, we also calculated variance inflation factors to test for multi-collinearity. We have attempted to clarify our use of the PRECEDE-PROCEDE framework and how it operates in this population. Please see below for specific modifications.

Major Compulsory Revisions

The authors must address the PRECEDE-PROCEED model (as opposed to individual variables) more fully in the introduction and then in the analysis and discussion. How does the model operate in this population – does it add anything beyond classical SCT to the understanding of their higher fat intake?

We used PRECEDE-PROCEED as an organizing framework in the creation of the questionnaire and in guiding the analysis, rather than an explanatory model of health behavior. The PRECEDE framework organizes constructs, such as

self-efficacy, perceived benefits/expectancies, and barriers, that are common to many other models, including SCT, Health Belief Model, and Transtheoretical Model. We believe there are many appropriate models that could be used to examine fat intake in this population; however, we selected PRECEDE for its flexibility in adapting to different populations/ cultures.

On review, we see how our introduction sentence in the PRECEDE paragraph could be make it seem like a explanatory model and have deleted it. We have taken care not to refer to it as a model, but rather a framework. We have also included additional information about PRECEDE as an organizing framework.

It is difficult to assess how PRECEDE operates in this population. As the Reviewer notes, the low R² values seen here suggest there is a great deal of variation in fat intake not captured. To answer the question posed by the Reviewer, we re-ran the regression models with all psychosocial factors included in one model to see how the R² values would be affected. The values were not much different from the predisposing scale (see table below), suggesting the entire PRECEDE framework added nothing meaningful above the predisposing factors alone. We have added these results to the results.

	Full "Model"		Predisposing Factors		Reinforcing Factors		Enabling Factors	
	Unadj. R ²	Adj. R ²	Unadj. R ²	Adj. R ²	Unadj. R ²	Adj. R ²	Unadj. R ²	Adj. R ²
Total Fat (g/day)	19%	15%	16%	15%	12%	10%	13%	11%
Saturated Fat (g/day)	20%	16%	17%	15%	14%	12%	14%	12%
Fat-related habits scale	19%	15%	17%	15%	4%	2%	4%	2%

Introduction:

“Theory-based research promotes an understanding of behavior change mechanisms and identifies relevant mediators that an intervention should target .” [deleted from page 5]

“The PRECEDE (Predisposing, Reinforcing, and Enabling Constructs in Educational Diagnosis and Evaluation) framework, which has been used to understand motivations for healthy dietary behaviors and mediating factors in dietary interventions, categorizes psychosocial variables into 3 main categories: predisposing, reinforcing, and enabling factors [14]. It is important to note that while PRECEDE serves as framework for organizing factors and identifying intervention strategies, it does not predict or explain these factors [15].” [page 5]

Results:

“There was little difference in the amount of variance explained between models that included all predisposing, reinforcing, and enabling factors together and predisposing factors separately.” [page 12]

Since the variables are classic SCT variables – self-efficacy is almost universally found to be an excellent predictor of behavior – the paper’s true potential is in showing how the variables relate to each other in influencing behavior in this important population. If the PRECEDE-PROCEED configuration is not successful (as the very low r-squared values reported in the paper suggest), then what role should PRECEDE-PROCEED play in future endeavors? Does a statistical model more consistent with classical SCT do any better in predicting behavior? What are the implications of this (almost certain) failure? Even with the limitations discussed by the authors, there seem to be important points to make about the theories’ shortcomings; see: Ogden, J. (2003). Some problems with social cognitive models: A pragmatic and conceptual analysis. *Health Psychology*, 4, 424-428.

The Reviewer raises several good points and we appreciate the inclusion of the reference and enjoyed reading both the Ogden article and spirited response by Ajzen and Fishbein (Health Psychology 2004 Jul;23(4):431-4).

Our primary interest in these analyses was not to test PRECEDE-PROCEED as an explanatory model, but rather as an organizational tool to determine which of these factors may influence dietary behavior. It is not clear to us whether the low R^2 values are due to poor “model” fit or perhaps the brevity of the instrument, as discussed in Ogden 2003. If additional items representing other constructs, perhaps from a model like SCT, had been included within the same model, we would likely see improved model fit. We are hesitant to make recommendations about PRECEDE or SCT based on this one cross-sectional study, as both have a demonstrated history of successful use. However, we feel examining this question again using “broader” models with more constructs would be interesting and have added this to the discussion.

“Fourth, most of the psychosocial factors were assessed via single item measures; therefore, all the components of complex concepts such as social support were likely not captured. In addition, it is possible that the questionnaire may not have accurately captured all important factors affecting fat intake. Future investigations may benefit from employing a broader model of health behavior with additional constructs, for example Social Cognitive Theory, and more detailed assessment tools.” [page 17]

It is unlikely that multiple-regression is the appropriate analytic approach, but it is difficult to tell from the description of the theoretical model provided. The sample size is large enough to employ structural analysis, which could test the assumed posited relations between the theoretical variables.

We appreciate the reviewer’s need for more information about our statistical analyses. We agree that structural equation modeling is a very useful tool for understanding the relationship among mediating variables, especially those that are highly correlated. To examine potential multi-collinearity, we computed variance inflation factors for all predisposing, reinforcing, and enabling factors (separately by category and in one combined model). All VIFs were well below

10 and tolerances <0.10. The table is presented below for the Reviewer, but not included in the manuscript in light of the second Reviewer's request for brevity.

Variable*	VIF	1/VIF
enc_you_3	5.09	0.196536
fgp_3	4.77	0.209515
fgp_2	4.66	0.214460
enc_you_2	4.14	0.241608
eat_you_3	4.11	0.243119
prep_you~3	3.65	0.274253
tell_you~3	3.61	0.276785
eat_you_2	3.37	0.296900
afford_3	3.01	0.331840
fat_less~3	2.95	0.339029
afford_2	2.89	0.345565
tell_you~2	2.88	0.347812
fat_less~2	2.76	0.362228
you_nf_3	2.38	0.419322
prep_you~2	2.36	0.423130
you_nf_2	2.17	0.460164
Education_3	1.86	0.538080
Education_2	1.84	0.542534
Education_4	1.61	0.621875
rest_fds~3	1.57	0.638971
rest_fds~2	1.51	0.663510
dt_canc_3	1.30	0.771143
prep_tm_3	1.29	0.774944
dt_canc_2	1.28	0.780604
sex	1.25	0.799502
prep_tm_2	1.24	0.808622
info_fds~3	1.21	0.826192
info_fds~2	1.17	0.854930
age	1.13	0.885776
bmi	1.12	0.894537
Mean VIF	2.47	

* See key below for list of variable questions and labels. All psychosocial factors are categorical: _2 and _3 denote the use of indicator variables. VIFs were also computed as continuous variables and VIFs for all factors <2.5.

Key

Predisposing Factors

	Variable
Do you think what you eat and drink are related to your own chance of getting cancer?	dt_canc
How important is it to you personally to eat a diet low in fat?	you_nf
If you wanted to eat less fat, how confident are you that you could do it?	fat_less
Have you ever heard of the Food Guide Pyramid?	fgp

Reinforcing Factors

If you tried to eat healthier foods, how much could you count on the people close to you:	
Encourage you.	enc_you
Tell you about healthier foods and how to prepare them.	tell_you
Prepare healthier foods with or for you.	prep_you
Eat healthier foods with you.	eat_you

Enabling Factors

Do you feel that you can afford to purchase healthy foods?	afford
Do you feel it takes a lot of time/ trouble to prepare healthy foods and meals?	prep_tm
Do you feel that it is easy for you to order healthy foods when you go out to eat at restaurants?	irest_fds
Do you more need information on how to prepare healthy foods and meals?	info_fds

Due to the lack of colinearity and the complexity of conducting structural equation modeling with categorical variables, we believe our model is appropriate. We selected multiple linear regression models because we wanted to test the linear relationship between the individual factors and fat intake. We have attempted to clarify this in the methods section.

“To examine potential multi-colinearity, we computed variance inflation factors (VIF) for all predisposing, reinforcing, and enabling factors (separately and in a single model) and all VIFs were well below 10.” [page 9]

Reviewer 2

Title: Psychosocial Correlates of Dietary Fat Intake in African American Adults: A cross-sectional study

Reviewer's report:

The purpose of this study is to examine the association between psychosocial factors and total and saturated fat intake among African Americans. This paper was well written. The authors clearly state the research objective and provide substantial rationale for this study. The title and abstract were clearly written and accurately reflect the manuscript's content. The methods are clearly described. There was a thorough description of the conceptual model which enhanced the reader's understanding of the paper. The manuscript adheres to reporting standards. The discussions and conclusion are appropriately presented, but could be more concise. I also felt that the introduction section could be more concise as well. The tables are quite dense, but given the data it is difficult to condense the information without losing important information.

We appreciate the Reviewer's comments. We have deleted almost 200 words from the introduction and discussion by streamlining language in an effort to keep the text as concise as possible without losing vital information.

For example,

Original:

“Approximately 70% of African Americans are overweight or obese, considerably higher than the national average of 57% [5]. It is important to note that obesity likely results from a complex combination of environmental, metabolic, and genetic factors and a diet low in fat is not sufficient to prevent obesity. Current dietary guidelines recommend that 20-35% percent of total energy intake comes from fat (<10% of energy from saturated fat) [6]. However, available data suggest that, in general, African Americans tend to exceed these guidelines and consume a higher percentage of energy from dietary fat than Whites [7-10]. For example, based on the 1994-1996 USDA's Continuing Survey of Food Intakes by Individuals

(CSFII), only 25% of non-Hispanic Blacks met dietary fat recommendations [11].” [122 words page 1]

Revised:

“Current dietary guidelines recommend that 20-35% percent of total energy intake comes from fat (<10% of energy from saturated fat) [5], yet African Americans tend to exceed these guidelines more often than Whites [6-9]. For example, based on the 1994-1996 USDA’s Continuing Survey of Food Intakes by Individuals (CSFII), only 25% of non-Hispanic Blacks met dietary fat recommendations [10]. Furthermore, approximately 70% of African Americans are overweight or obese, considerably higher than the national average of 57% [11]. However, obesity likely results from a complex combination of environmental, metabolic, and genetic factors and a diet low in fat is not sufficient to prevent obesity.” [104 words page 1]