Food Preferences in Eastern Kentucky: What Changes a Person's Food Preference from Unhealthy to Healthy Habits?

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Food Preferences in Eastern Kentucky: What Changes a Person's Food Preference from Unhealthy to Healthy Habits?

In the state of Kentucky, specifically Eastern Kentucky, diabetes, hypertension, obesity, and heart disease are well above the national average. In the Eastern Kentucky area, adult diabetes rises as much as 74% above the national average (Ungar, 2005). The entire state of Kentucky has a prevalency rate two percent above the national average (Kentucky Institute of Medicine, 2007, p. 26). The hypertension rate in Kentucky is 29.4% versus a national average of 25% (Trust for America's Health, 2006). Heart disease is the leading cause of death in the state of Kentucky with "Seventy-three of Kentucky's 120 counties hav[ing] CVD mortality rates above the national average, and 20 counties that exceed the national average by 25%. In 2000, the American Heart Association ranked Kentucky 48th in the nation" (CDC, 2006, p. 4) According to the Kentucky Institute of Medicine, "the rate of obesity is increasing rapidly both in Kentucky and the nation. An estimated 29% of adult Kentuckians are obese compared with a US average of 24%" (2007, p. 16). Obesity affects over one-fourth of Kentucky residents and contributes too many other diseases, such as heart disease, diabetes, and cancer, which have been previously mentioned at rates higher than national average. The death rate for Kentuckians is 18% higher than the national average (Ungar, 2005). Families from the Eastern Kentucky area have had considerable experiences with these illnesses. All of these diseases can be caused or made more devastating by not adhering to a healthy diet. Research has proven that the only way to prolong life would be to control how one treats his or her body. The increasingly unhealthy population must gain the motivation to adjust eating habits to start feeling better and having more energy.

With the knowledge of what a healthy diet can do it is a reasonable question as to why the majority of the population still chooses to maintain an unhealthy diet. There is a high prevalence of people, for one reason or another, who eat very unhealthy diets even though they have medical

conditions caused or worsened by the eating habits they maintained. Also, if healthy diet lifestyles are good for the unhealthy, then they must surely aid in maintaining the wellbeing of the healthy.

In today's fast paced information age, the problem is not knowing the right solution; it seems to be having the time and resources to use that knowledge. In a first world country such as the United States it is almost impossible not to receive information. Societal marketing has done its share to spread information about the pros and cons of healthy eating and almost everyone has had the opportunity to receive this knowledge and also to take advantage of it. So, why then are these fatal diseases on the rise and obesity rates at an all time high? And why are lifestyle and diet changes so hard to make when severe health complications or even death is imminent?

There are many factors that cause people to maintain the eating habits they have, from childhood memories to taste preference. In the article, "Good," Mike Powers (1996), states that the experiences a person has during their life is the main factor that affects the way people formulate their diet. Many people's likes and dislikes considering food are shaped during their younger impressionable years. Many of these opinions about eating have become ingrained in their lifestyle even though they often conflict with what they know they should eat for health reasons.

In his article, Powers (1996) refers to Carole Bisogni, Division of Nutritional Sciences professor, by quoting:

> We grow up in households with established patterns of shopping, cooking, and eating. We live through social trends, historical eras, and perhaps in different places. We meet other people who influence our lives, and we take on different roles and responsibilities. All these experiences shape our thoughts, feelings, and actions related to food. (p. 21)

It is clear that people develop fundamental eating habits as children, but these habits are influenced by one's environment. In the article "Do as I DO," Rebecca Segall (2001) relates that one of the

strongest societal/environmental factors is our parents. She reports that parents who fluctuate between different types of eating habits such as dieting and over indulging will more likely have children who are overweight. However, children of parents who are vigilant toward healthy diets are less likely to become overweight.

These factors help to build our food preference during our childhood, but factors in adulthood influence our choices just as strongly. Powers (1996) states that a person's environment throughout his or her life is the major source of five different influences on their food preference: ideals, personal factors, resources, social framework, and food context. He goes on to list the values reported by research participants as taste, monetary consideration, physical well-being, convenience, managing relationships, and quality with taste being most important. Generally, people eat what they like and don't eat what they dislike. They usually make these choices without regard to cost, convenience or nutrition. Some participants even reported indulging in foods that were knowingly unhealthy or the cause of discomfort just because they enjoy the taste of that particular food. In a related article "Taste Matters," Steve Mirsky (1999) reported that in a research project conducted by the American Dietetic Association all of the participants expressed that taste was the bottom line when considering food choices.

A study reported in the *Lancet* (2003) found that advertising was a major influence in the consumption patterns of children; the more they watched television advertisements the more inclined they were to consume large amounts of calories. However, "the light at the end of the tunnel is that advertising could be used for good effect" (p. 1593). If advertising works to encourage children to eat more, then it could also be used to influence them to eat healthy foods. A study, promoting lower fat options in vending machines, proved to positively influence a trend toward choosing lower fat options.

Powers (1996) emphasizes that knowledge, motivation and will power are the keys to changing eating habits, but these often are not present. Even in highly motivated situations such as recovering from a heart attack or managing diabetes the motivation or will power is in conflict with other values such as taste, social relationships, convenience, resources and quality. Power's solution to this situation is that when health and nutrition providers consider the individual's ideals, resources, personal preferences, social relationships, and food context sustainable changes in eating habits will have a greater chance of succeeding. In consideration of this, this project was designed to discover some of the different ideals, resources, personal preferences, social relationships, and food context to find a more acceptable and manageable way of changing and maintaining dietary habits. Because, after all, Segall (2001) stated the obvious in her article, "bad eating habits…are not impossible to break" (p. 22).

The purpose of this study was to determine the reasons why individuals are reluctant to try healthy foods. As such, the objectives of this research project was to gather information about the intention of participants to prepare and eat foods from the workshops; to gain their reaction to the foods they sampled; and to gather a sample of opinions as to why individuals prefer to maintain an unhealthy diet even though they have knowledge of the lasting consequences. The study design was a single cross sectional, pre-post survey administered during an existing Healthy Cooking Workshop conducted by the University of Kentucky (UK) County Extension Office, which provided participants with knowledge of alternative cooking methods and the opportunity to sample foods prepared from a healthy recipe. Participants were given survey instruments as a pre-test/post-test before and after sampling prepared foods. Participants were given pre-tests, which took approximately five minutes, before the workshop began where a meal was prepared from chosen recipes. Immediately following the sample meal, participants were provided the same survey as a post-test, which took an additional five minutes. Both pre and post surveys together took

approximately ten minutes. If participants decided not to participate in this research, he/she was allowed to continue their participation in the UK County Extension Healthy Cooking Workshop. Pre-tests and post-tests were then be identified only with a participant number, which allowed comparisons of pre-test and post-test scores.

The study population for this research project was a convenience sample of participants in the UK County Extension Healthy Cooking Workshops who agreed to participate. The workshops were offered in Eastern Kentucky, which is predominately white with small percentages of African American, Asian and Latino. Age was not a factor in the selection of the participants. The project did not target any specific population, but was open to all community volunteers of any ethnicity or age group. The potential benefits and risks were minimal to the subjects. However, due to the nature of the questionnaire participants may have gained a beneficial perspective on healthy eating. Society, however, has a much better potential for benefit. The data collection and analysis may provide new and/or additional information on reasons people give for preparing and eating less healthy foods. This information could lead to additional or different perspectives of social marketing healthy alternatives to unhealthy diets.

Results

(Note: Mr. Ritchie died on February 5, 2008, before he was able to complete the data analysis for his study. With the help of his assistant (made necessary by his vision impairment), he entered the data for 49 subjects into an excel spreadsheet, ensured that the coding of all items was such that a higher score would represent a more healthful choice (all items were reverse coded to accomplish this, except numbers 7, 8 and 10 which were already coded in a healthful direction), calculated mean scores on all items on the pre and post tests, and prepared a chart with line graphs of mean item scores on the pre and post test (see Chart 1 and its associated data table). He discussed the additional analyses he planned to do with his faculty advisor, but his death prevented him from

completing his plans. He intended to carry out t-tests to determine if mean scores on pre and post test items were significantly different from one another. He also planned a factor analysis of 11 of the 12 survey items, omitting item 10 (subject's intention to prepare the recipes at home) because he wanted to use that as an outcome variable in subsequent analyses. If he found interpretable factors, he planned to use factor scores as predictors of subjects' intention to prepare the recipes they tried at home in a follow up multiple regression analysis. These analyses were carried out after his death by Cynthia Cole using SPSS version 15. Mr. Ritchie wrote the previous sections of the paper. Cynthia Cole wrote the remainder of the paper from the Results section to the end of the paper.)

Mean scores on all 12 survey items for pre and post tests are shown in Chart 1. The t-tests did not identify any statistically significant differences when post-test means were subtracted from pre-test means. Means for each item are shown in the data table below the line graph for pre and post test scores.

Separate factor analyses were carried out for pre-test responses and post-test responses, using all items except item 10 (willingness to prepare the recipes again), which was not included in either factor analysis. Varimax rotation was used for both. (See Tables 2 – 5.) The factor analyses yielded 4 interpretable components, the same for each analysis. Ten of the 11 items had a factor loading score above .6 on the same factor components for pre and post tests. Item 12 did not have a factor loading score above .6 on any of the components in the pretest analysis, but had a score very close to that on Component 4. This item had a factor loading score of .750 on Component 2 in the post-test analysis. Because it did not load reliably on the same component in both analyses and loaded weakly on multiple components in both analyses, it was eliminated from further analyses.

Four items (1, 2, 3 and 5) demonstrated a factor loading score above .6 on Component 1, which could be described as the Lifestyle Compatibility of healthy food. These items had to do with taste, willingness of family members to eat healthy food, cost, and ease of preparation. Three items

(4, 6 and 9) loaded on Component 2, which could be interpreted as seeing food as a way to Promote Health. Two items (8 and 9) loaded on Component 3, which could be interpreted as an interest in eating food to Prevent Negative Health Events (a heart attack in 10 years or tomorrow). One item (11) loaded on Component 4, which could be described as preferring food based on Family Tradition.

Factor scores on these 4 components were calculated for each subject and entered into a regression equation using pre-test factor scores on the four interpretable components as independent variables and post test scores on item 10 (intention to prepare the recipes again) as the dependent variable. As shown in Table 6, this model predicted 18.5% (adjusted) of the variance in intention to prepare the recipes again. The overall model was significant (p=.01) and three of the four components (Lifestyle Compatibility, Prevent Negative Health Events, and Family Tradition) made statistically significant unique contributions to predicting intention to try the recipes again. Two additional regression equations were calculated. The first used pre-test factor scores on the four components to predict pre-test intention to try the recipes again and the second used post-test factor scores to predict post-test intention to try the recipes again. Neither model was statistically significant.

Discussion and Conclusions

Mr. Ritchie was aware before he died that the differences between group means on the individual items in the pre and post test surveys were not statistically significant. He also knew that the mean score for the group of subjects on four items, including intention to try the item again at home, was lower after trying the recipe than it was before trying it, though the difference was not significant. (See Table 1.) It was this observation that led him to say that he had proved again that you can lead a horse to water but you can't make him drink it.

The analyses that Mr. Ritchie planned but didn't have time to carry out provided additional insights. The survey that he designed appears to have promise as a new measure of food preferences, possibly particularly applicable in an Appalachian context. The items he designed appear to cluster together in a meaningful way and to have the ability to predict outcomes of interest. This small pilot study indicates that beliefs held by participants before attending a food preparation workshop and their experiences at the workshop may affect whether the workshop will influence their intention to try the new recipes. Of the three statistically significant factors used in the multiple regression equation, seeing food as compatible with lifestyle and able to prevent negative health events were positively associated with intention to try the recipes again. Preferring food consistent with family tradition was negatively related to intention to try the recipes again. The component that drew upon items that related food to health promotion was not significantly related to the outcome. These results suggest that some attendees at food preparation workshops are more prepared to take advantage of the workshop content than others and that assessing overall group changes on pre-post measures without taking that into account may obscure the fact that some benefit more than others.

It would be useful to continue work on the Food Choices Survey and to validate it for use with people who live in Appalachia. The high rates of obesity in the region are likely to be related to food choices, at least in part, and a valid and reliable measure of food preferences could be used to evaluate the outcomes of such community interventions as food preparation workshops.

This study had several limitations, including small size, use of a newly developed measure, a very limited amount of time between administration of pre and post test and a limited "dose" of the intervention. There were also no control or comparison groups. Future studies could correct these problems and build upon the results.

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Figure 1: Food Choices Questionnaire

Circle the number that best describes how you feel right now

1. I do not eat healthy food because it does not taste as good.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	No Preference	Slightly Agree	Agree	Strongly Agree

2. I don't prepare food with healthy ingredients because I think my family and friends would not eat it.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	No Preference	Slightly Agree	Agree	Strongly Agree

3. I do not prepare healthy recipes because the ingredients are too expensive.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	No Preference	Slightly Agree	Agree	Strongly Agree

4. I know the difference between healthy and unhealthy foods, but I'm just not that concerned.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	No Preference	Slightly Agree	Agree	Strongly Agree

5. Healthy food is harder to prepare.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	No Preference	Slightly Agree	Agree	Strongly Agree

6. I think that most foods are not that unhealthy.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	No Preference	Slightly Agree	Agree	Strongly Agree

7. If I knew a type of food would give me a heart attack in 10 years, I would change my eating habits.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	No Preference	Slightly Agree	Agree	Strongly Agree

8. If I knew eating a type of food would give me a heart attack tomorrow, I would change my eating habits.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	No Preference	Slightly Agree	Agree	Strongly Agree

9. Healthy food is not appealing to me.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	No Preference	Slightly Agree	Agree	Strongly Agree

10. I will most likely prepare the recipes that I tried today again.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	No Preference	Slightly Agree	Agree	Strongly Agree

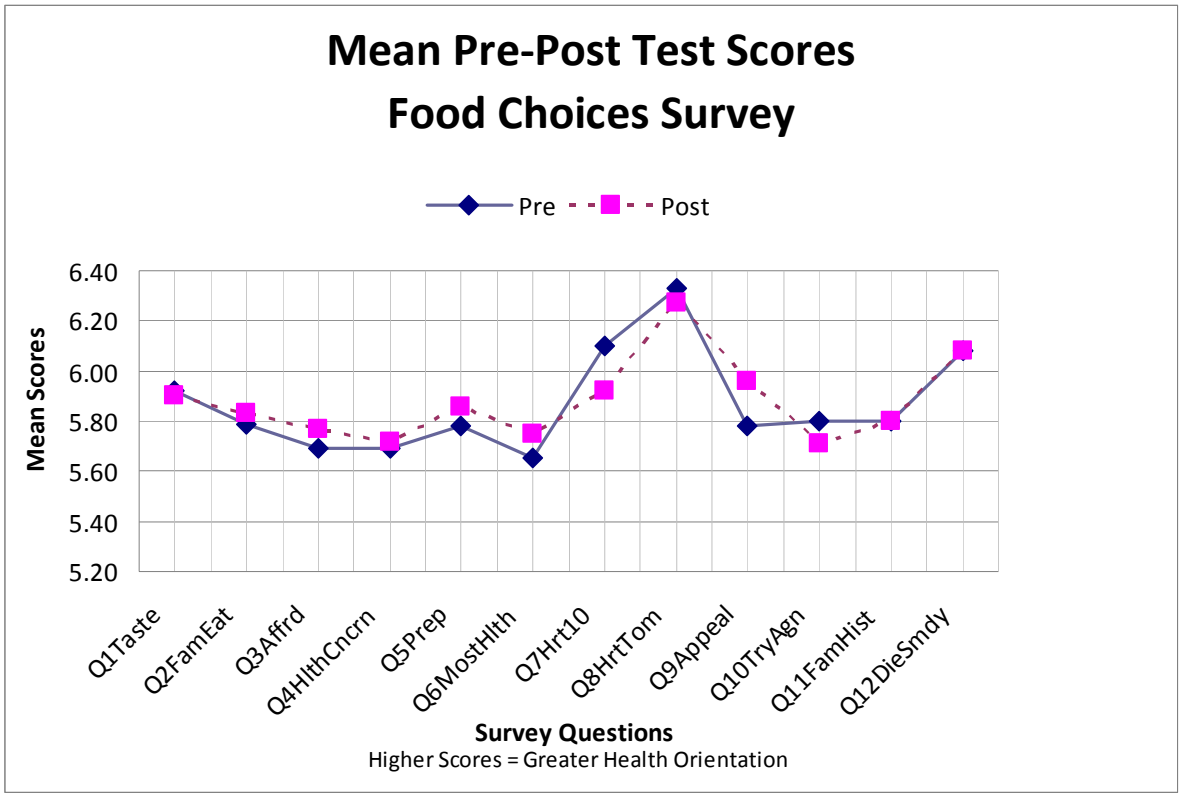
11. I eat the way I do because it was handed down in my family.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	No Preference	Slightly Agree	Agree	Strongly Agree

12. We are all going to die someday. I might as well eat what I want.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	No Preference	Slightly Agree	Agree	Strongly Agree

Chart 1: Mean Pre and Post Test Scores on Food Choices Survey



Data Table: Mean Pre-Post Test Scores Food Choices Survey

	Pre	Post
Q1Taste	5.92	5.90
Q2FamEat	5.79	5.83
Q3Affrd	5.69	5.77
Q4HlthCncrn	5.69	5.72
Q5Prep	5.78	5.86
Q6MostHlth	5.65	5.75
Q7Hrt10	6.10	5.92
Q8HrtTom	6.33	6.27
Q9Appeal	5.78	5.96
Q11FamHist	5.80	5.80
Q12DieSmdy	6.08	6.08
Total	64.61	64.86

Table 1: Paired Pre-Post t-Tests for All Survey Items

Pairs	Mean Difference	Std. Deviation Diff.	Std. Error Mean Diff.	t	Df	Sig. (2-tailed)
V1 Pre-Post Taste	.020	.901	.129	.159	48	.875
V2 Pre-Post FamEat	-.043	.806	.118	-.362	46	.719
V3 Pre-Post Affrd	-.064	.818	.119	-.535	46	.595
V4 Pre-Post HlthCncrn	-.043	.955	.139	-.306	46	.761
V5 Pre-Post Prep	-.082	.838	.120	-.682	48	.498
V6 Pre-Post MostHlth	-.083	.871	.126	-.663	47	.511
V7 Pre-Post Hrt10	.188	1.424	.206	.912	47	.366
V8 Pre-Post HrtTom	.061	1.519	.217	.282	48	.779
V9 Pre-Post Appeal	-.170	.940	.137	-1.242	46	.221
V10 Pre-Post TryAgn	.063	1.137	.164	.381	47	.705
V11 Pre-Post FamHist	.000	.736	.105	.000	48	1.000
V12 Pre-Post Die Smdy	.000	.780	.114	.000	46	1.000

Table 2: Rotated Component Matrix for Pre-Test Survey Items

	Component			
	1	2	3	4
V1Taste	.771	.154	-.142	-.007
V2FamEat	.822	.222	.210	.133
V3Affrd	.742	.019	-.188	.265
V4HlthCncrn	.219	.810	-.029	-.050
V5Prep	.683	.079	.270	-.088
V6MostHlth	-.055	.872	-.188	.132
V7Hrt10	-.028	.124	.863	.119
V8HrtTom	.070	-.206	.794	.151
V9Appeal	.328	.667	.212	-.152
V11FamHist	.010	-.185	.101	.841
V12DieSmdy	.232	.303	.266	.596

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 5 iterations.

Component 1: Lifestyle Compatibility
Component 2: Promote Health
Component 3: Prevent Negative Health Events
Component 4: Family Tradition

Table 3: Total Variance Explained by Factor Analysis of Pre-test Survey Items

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.194	29.035	29.035	3.194	29.035	29.035	2.504	22.764	22.764
2	1.956	17.786	46.821	1.956	17.786	46.821	2.124	19.307	42.071
3	1.415	12.865	59.687	1.415	12.865	59.687	1.710	15.542	57.612
4	1.011	9.191	68.878	1.011	9.191	68.878	1.239	11.265	68.878
5	.833	7.574	76.452						
6	.699	6.356	82.808						
7	.667	6.066	88.873						
8	.470	4.274	93.148						
9	.323	2.936	96.084						
10	.254	2.312	98.396						
11	.176	1.604	100.000						

Extraction Method: Principal Component Analysis.

Table 4: Rotated Component Matrix for Post-Test Survey Items

Rotated Component Matrix(a)

	Component			
	1	2	3	4
V1TastePost	.863	.173	.011	.047
V2FamEatPost	.891	.151	.161	-.053
V3AffrdPost	.676	.116	.069	.442
V4HlthCncrnPost	.121	.819	-.094	.057
V5PrepPost	.695	.393	-.004	-.109
V6MostHlthPost	.124	.805	-.173	-.107
V7Hrt10Post	.108	.070	.914	.034
V8HrtTomPost	.047	-.120	.897	.062
V9AppealPost	.495	.691	.169	.126
V11FamHistPost	.008	.076	.067	.952
V12DieSmdyPost	.251	.750	.166	.202

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 5 iterations.

Component 1: Lifestyle Compatibility
Component 2: Promote Health
Component 3: Prevent Negative Health Events
Component 4: Family Tradition

Table 5: Total Variance Explained by Factor Analysis of Post-Test Survey Items

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.208	38.257	38.257	4.208	38.257	38.257	2.830	25.729	25.729
2	1.903	17.304	55.561	1.903	17.304	55.561	2.606	23.687	49.416
3	1.230	11.181	66.742	1.230	11.181	66.742	1.771	16.096	65.512
4	1.060	9.635	76.376	1.060	9.635	76.376	1.195	10.864	76.376
5	.650	5.911	82.287						
6	.585	5.315	87.602						
7	.540	4.905	92.507						
8	.353	3.210	95.717						
9	.216	1.964	97.681						
10	.146	1.330	99.011						
11	.109	.989	100.000						

Extraction Method: Principal Component Analysis.

Table 6: Regression of Pre-test Scores on Post-test Intention to Try Recipes Again

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.507(a)	.257	.185	1.124

a Predictors: (Constant), TraditionFamHistOnlyPreWt, EaseAcceptancePreWt, PrevNegHlthEvntPreWt, FoodForHlthPreWt

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	17.936	4	4.484	3.549	.014(a)
	Residual	51.803	41	1.263		
	Total	69.739	45			

a Predictors: (Constant), TraditionFamHistOnlyPreWt, EaseAcceptancePreWt, PrevNegHlthEvntPreWt, FoodForHlthPreWt

b Dependent Variable: V10TryAgnPost

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	5.446	2.515		2.165	.036
	LifestyleCompatPre	.360	.178	.288	2.020	.050
	HealthPromotPre	-.358	.233	-.219	-1.536	.132
	PrevNegHlthEvntPre	.404	.173	.322	2.333	.025
	FamTraditionPre	-.808	.343	-.326	-2.354	.023

a Dependent Variable: V10TryAgnPost