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Sorority Eating Patterns: A Longitudinal Investigation

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SORORITY EATING PATTERNS: A LONGITUDINAL INVESTIGATION

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SORORITY EATING PATTERNS: A LONGITUDINAL INVESTIGATION

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To date, most research in the area of college women and eating disorders has only been conducted to determine the prevalence of eating disorders among selected college subgroups. Although such research is limited, particularly for those women that choose to join social sororities, it generally indicates that sorority women represent a subgroup with high instances of eating disorders and often presents a conflicting view of these women's eating patterns and beliefs regarding weight loss and food. The present study was designed to continue the investigation of sorority women and their eating patterns by conducting a longitudinal study, consisting of five assessments over the course of one academic year, to assess whether the sorority women who are engaging in maladaptive eating behaviors and thought processes had these problems before joining a sorority or developed them later on as a member of the sorority. Specifically, this study was designed to answer the following research questions: First, do sorority women and non-sorority women differ in regards to weight, self-objectification, eating beliefs, or eating disorder symptoms at the start of or throughout the study? Additionally, do these initial reported weights, self-objectification scores, eating beliefs, or eating disorder symptoms vary over time for either group? Finally, is sorority membership a factor in any of these changes?

Participants completed self-report measures of weight, eating beliefs (EBQ), eating disorder symptoms (EDDS), and self-objectification (TSOQ). The effects of time were analyzed for sorority members and non-sorority members using a 2 (sorority membership: sorority vs. non-sorority) x 5 (time: August vs. September vs. November vs. February vs. April) repeated measures analysis of variance (ANOVA) approach for the all of the dependent variables. Additionally, the interactions of sorority membership were analyzed. Results indicated there were no significant differences for self-objectification or the eating beliefs subscales of stereotypes, superstitions, or science. However, significant findings were shown for weight, the salves eating belief subscale, and reported eating disorder symptoms across time. Results are discussed in regards to the overall lack of significant differences between the two groups.

Introduction

Eating disorders, both as a group and individually, are defined by the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-*TR; 2000). Eating disorders are severe disturbances in eating behaviors and are comprised primarily of Anorexia Nervosa, Bulimia Nervosa, and Binge Eating Disorder.

Anorexia Nervosa

Anorexia Nervosa is characterized by a refusal to maintain a minimally normal body weight. Individuals with this disorder are intensely afraid of weight gain and have a significant disturbance in the perception of the shape or size of their body. Subtypes of Anorexia Nervosa include 1) restricting type, in which weight loss is accomplished and maintained through dieting, fasting, or exercise; and 2) binge-eating/purging type, in which the individual usually restricts food intake but also regularly engages in binge eating and/or purging behaviors. Anorexia Nervosa occurs at a rate of .03% to .05 % in the general female population, but many individuals who are subthreshold for the disorder are more frequently observed (American Psychiatric Association, 2000; Hoek & van Hoeken, 2003).

Bulimia Nervosa

Bulimia Nervosa is characterized by repeated episodes of binge eating followed by inappropriate compensatory behaviors such as self-induced vomiting, use of laxatives or diuretics, or excessive exercise in an effort to prevent weight gain. Subtypes of Bulimia Nervosa include 1) the purging type, in which individuals regularly compensate for the binge-eating with self-induced vomiting, laxative use, diuretics, or enemas, and 2)

the nonpurging type, in which the individual attempts to compensate through dietary fasting or excessive exercising. The prevalence rates for bulimia in the general female population range between 1% and 3% (American Psychiatric Association, 2000; Hoek & van Hoeken, 2003).

Binge Eating Disorder

Binge eating was first described as a pattern of overeating episodes followed by feelings of loss of control, culpability, and attempts to restrict eating to lose weight (Stunkard, 1959). Binge eating as a disorder is described in the *DSM-IV-TR* as a disorder in need of further study and can be considered a subcategory of Eating Disorders Not Otherwise Specified (NOS). The proposed features for this disorder entail recurrent episodes of binge eating for which the person has significant distress and does not regularly employ the use of compensatory behaviors, as in bulimia nervosa (American Psychiatric Association, 2000). Although Binge Eating Disorder is a relatively new disorder, tentative estimates of prevalence of these behaviors are 1% to 3% in community samples (Fairburn, Hay, & Welch, 1993; Hoek & van Hoeken, 2003; Spitzer et al., 1992; Spitzer et al., 1993).

Eating Disorders Among College Populations

Although eating disorders represent a prominent concern for women in general, this concern is particularly high regarding collegiate populations. Numerous studies in this area have found that disordered eating behavior, attitudes, and beliefs are prevalent among college women in general (Carter & Eason, 1983; Harris, 1995; Hesse-Biber, 1989; Klemchuck, Hutchinson, & Frank, 1990; Kurtzman, Yager, Landverck, Wiesmeier, & Bodurka, 1989; Mintz & Betz, 1988). Prevalence rates of eating disorders for college

women are estimated at 3% to 19% for bulimia (Mintz & Betz; Powers, Schulman, Gleghorn, & Prange, 1987) and 1% to 2% for anorexia (Mintz & Betz). Additional research has suggested that even more collegiate women display disordered eating behaviors, attitudes, and beliefs while not meeting the criteria for an actual eating disorder (Ash & Piazza, 1995; Klemchuck et al., 1990; Mintz & Betz, 1988; Schwitzer, Bergholz, Dore, & Salimi, 1998; Schwitzer, Rodriquez, Thomas, & Salimi, 2001). Koszewski, Newell, and Higgins (1990) reported 6% of undergraduate women are concerned about bulimia and anorexia, whereas 25% to 40% indicated moderate problems and concern that their eating was out of control.

However, most research in the area of college women and eating disorders has been conducted to determine the prevalence of eating disorders among selected college subgroups. Specifically, evidence suggests that eating disorders, such as bulimia nervosa, have higher rates of incidence within college social groups, such as cheerleading squads (Squire, 1983), athletic teams (Crago, Yates, Beutler, & Arizmendi, 1985; Skowron & Friedlander, 1994), and dance camps (Garner & Garfinkel, 1980). And, groups that are most likely to display the symptoms of bulimia nervosa, most notably binge eating, are groups that are made up almost entirely of women of the same age. This includes dance camps and athletic teams, as well as all-women residence halls and sororities (Crandall, 1988; Powell, 2001; Vanlone, 2003). The focus of this particular study is the subgroup comprised of sorority members.

Eating Disorders Within Sororities

With 2,908 undergraduate chapters and 80,336 newly initiated members in 2004 (National Panhellenic Conference, 2004), sorority women represent a significant and

growing proportion of collegiate women. From 2000 to 2004, National Panhellenic Conference (NPC) groups reported 710 new chapters of their organizations (National Panhellenic Conference). These numbers do not include the numerous women who choose to join 'social clubs' or local sororities that are not represented by NPC. Sorority women represent a subgroup of collegiate women often anecdotally associated with both eating disorders and concern with appearance (Crandall, 1988). However, there is a lack of research in this area, given the size of the group.

Although research specifically designed to study Greek life and eating disorders is limited, such research has indicated that sorority women represent a subgroup with high instances of eating disorders. Kurtzman et al. (1989) surveyed 716 female students at the University of California – Los Angeles, drawn from the Primary Care Clinic, the Women's Health Clinic, three sororities, athletic teams, dance majors, and undergraduate psychology class populations. They reported that 2.5% of the 200 sorority members they surveyed met diagnostic criteria for bulimia nervosa. However, it was also noted that the overall prevalence of eating disorders in all subgroups was consistent with those of other studies, which was about 2%.

In a study of 627 sorority women, Schulken, Pinciaro, Sawyer, Jensen, & Hoban, (1997) found that the fear of becoming fat, weight preoccupation, body dissatisfaction, the drive for thinness, and bulimic tendencies tend to be higher among sorority women than in previously studied college populations. Additionally, they reported that thin was the ideal body profile for the majority of the women. It was also noted, however, that although bulimia scores were higher for this population than in all but one previous study, these differences were not significant.

Crandall (1988) surveyed over 100 women in two college sororities and found evidence of group norms and social pressure related to binge eating. Specifically, Crandall found that within one sorority, the more one binged, the more popular one was. Within the other sorority, popularity was associated with "binging the right amount." Additionally, Crandall found, by the end of the academic year, a sorority member's binge eating could be predicted from the binge-eating level of her friends. Crandall further suggested that binge eating, like other acts, is an acquired pattern of behavior and might be acquired through modeling: as friendship groups grew more cohesive, a sorority member's binge eating grew more and more like that of her friends.

Meilman, von Hippel, and Gaylor (1991) surveyed 150 nonfreshmen women and found a significantly higher percentage of eating purgers and high-frequency eating purgers (at least four times a month) among sorority women. Specifically, it was reported that 72.2% of the 28 women in their sample who purged after eating were members of the Greek system, and that 80% of the 21 high-frequency purgers were also affiliated with a Greek organization. And, while there is also indication that the onset of eating disorders follows entrance into a group (Crago et al., 1985), and Squire (1983) suggested that the sorority milieu is likely to be a breeding ground for eating disorders, Meilman von Hippel, and Gaylor noted that it was unclear whether or not women who were attracted to Greek life might be more prone to bulimic behavior or whether the Greek system pressures women to be body conscious.

In contrast, a study by Wagner Hobbs, Grieve, and Grah (2004) indicated that, over the course of an academic year, there were no significant differences between sorority women and non-sorority women and no statistically significant changes within

these groups in terms of eating patterns, eating beliefs, or body shape/size. These findings suggest that those individuals with disordered eating patterns had these patterns of eating prior to attending college or pledging a sorority and that sorority women may not actually be at a higher risk for disordered eating than other campus women.

Likewise, over the course of three years, Allison and Park (2004) surveyed disordered eating, depression, self-esteem, body mass index (BMI), and ideal weight among sorority and nonsorority women and found that the groups did not differ in terms of disordered eating. However, sorority women reported higher scores on measures of drive for thinness than did nonsorority women. They concluded that sorority women were similar to nonsorority women in regards to eating, but they tended to maintain more stringent behaviors and attitudes about dieting throughout their college experience. Additionally, Alexander (1998) compared 239 sorority women, nonsorority women, and members of athletic and physical activity groups on campus and found that sorority women did not report significantly more eating disordered behaviors than either the control participants or the activity group participants. It was also discovered that the activity group participants consistently scored in a more pathological direction than the sorority members.

In general, research is still lacking for college women and disordered eating, particularly for those women that choose to join social sororities. Additionally, the research that is available often presents a conflicting view of these women's eating patterns and beliefs and is ultimately limited by their designs. Specifically, only two of the previous studies attempted to look at eating as a dynamic construct that changes over

time by utilizing a longitudinal research design and only three of the studies attempted to look at factors related to eating other than just the rates of eating disorders themselves.

Self-Objectification

Objectification theory (Fredrickson & Roberts, 1997) is a theoretical framework for understanding a plethora of psychological and physical consequences women face as a result of living in a culture that objectifies their bodies. One such consequence of this persistent objectification is that women become preoccupied with their own physical appearance and begin to view and treat themselves as objects and value their bodies more from a third-person perspective than a first-person perspective. This self-objectification, in turn, is theorized to have its own array of associated emotional and physical consequences, including an increase in body shame, depression, sexual dysfunction, and eating disorders.

Fredrickson and Roberts (1997) further suggest that body shame resulting from self-objectification may place women at risk for disordered eating. In a study of two independent samples of undergraduate women, Noll and Fredrickson (1998) found that self-objectification correlated positively with body shame, bulimic symptoms, and anorexic symptoms. They also found that the emotion of body shame mediated the relationship between self-objectification and disordered eating. Additionally, they found evidence that self-objectification contributed directly to disordered eating, in that the anticipation of body shame was enough to motivate women who self-objectify and are satisfied with their appearance to engage in disordered eating in order to maintain that state and avoid the shame altogether.

Limitations of Existing Research

Several significant limitations exist within the previous studies. In particular, most of the older and original studies in this area often lacked a non-Greek comparison group with which to compare the sorority women. This lack of a nonsorority group makes generalizing and stereotyping quite easy. Most notably, Crandall (1988) quickly generalized binge eating in sorority members to purging activity, even though he did not actually study purging. Furthermore, Alexander (1998) also extended beyond the scope of her findings to suggest that sorority women were still more pathological than nonsorority women, despite the results of her own study that suggested the contrary. Additionally, all but two of the previous studies involved a single assessment of eating patterns and/or beliefs. The use of a longitudinal research design allows detection of subtle long-term differences and changes. Further, all of the previous studies have utilized measures that attempt to assess the differences of sorority women without a measure that could explain why those differences actually exist. Within this line of research, objectification theory (Fredrickson & Roberts, 1997) presents a possible framework for understanding why women who join sororities may experience different thought processes but exhibit the same eating behaviors as other women. Sorority women may represent a group that is more aware and concerned with their physical appearance and also higher in trait self-objectification, but not necessarily dissatisfied with their bodies.

Finally, many of the previous studies had small sample sizes, most notably due to a lack of participating sorority members. These limitations, overall size of the group in

question, and most recent research findings mentioned indicate the necessity of additional research.

Current Study, Research Questions, and Hypotheses

This study intends to continue the investigation of sorority women and their eating patterns by conducting a longitudinal study, consisting of five assessments over the course of one academic year, to assess whether the sorority women who are engaging in maladaptive eating behaviors and thought processes had these problems before joining a sorority or developed them later on as a member of the sorority. Specifically, this study is designed to answer the following research questions. First, do sorority women and non-sorority women differ in regards to weight, self-objectification, eating beliefs, or eating disorder symptoms at the start of or throughout the study? Additionally, do these initial reported weights, self-objectification scores, eating beliefs, or eating disorder symptoms vary over time for either group? Finally, is sorority membership a factor in any of these changes?

Consistent with most research, it is first hypothesized that sorority women will differ in regards to eating behaviors and patterns from non-sorority members by displaying higher levels of disordered eating behaviors. Second, it is hypothesized that sorority women will differ with regard to weight from non-sorority members by weighing less. And, third, consistent with Allison and Park (2004) and in accordance with objectification theory (Fredrickson & Roberts, 1997), sorority members will exhibit higher rates of negative eating beliefs and self-objectification than non-sorority members.

Method

Participants

Sorority participants were recruited from women 18 years and older who were participating in the National Panhellenic Conference formal sorority recruitment process at a comprehensive southern university prior to the start of the fall semester. To account for the large number of undergraduate participating in recruitment, the comparison group was recruited from women between the ages of 18 and 25 years who were enrolled in large introductory courses at the same campus. The total sample size consisted of 43 women. The women in the sorority group (N = 12) averaged 18.08 years in age (*SD* = .515), 65.42 inches in height (*SD* = 2.678), 136.75 pounds in weight (*SD* = 34.825), and 12.08 years in education (*SD* = .289). The comparison group women (N = 31) averaged 18.42 years in age (*SD* = .807), 63.87 inches in height (*SD* = 5.512), 148.84 pounds in weight (*SD* = 37.778), and 12.39 years in education (*SD* = .667).

Measures

Eating disorder symptoms. A copy of the Eating Disorder Diagnostic Scale (EDDS; Stice, Telch, & Rizvi, 2000; Appendix A) was given to each participant to assess eating disorder symptoms. The EDDS consists of 21 items in three scales designed to examine symptoms of anorexia nervosa, bulimia nervosa, and binge-eating disorder and provides diagnoses for both clinical and subclinical level disorders. Questions are ordered such that bulimia nervosa diagnoses preempt binge-eating disorder diagnoses and anorexia nervosa diagnoses preempt bulimia nervosa diagnoses (Stice et al., 2000).

The EDDS has been shown to have strong criterion-related, predictive, and convergent validity (Stice et al., 2000), as well as acceptable test-retest reliability and

internal consistency. Four recent studies conducted by Stice, Fisher and Martinez (2004) have found that the EDDS showed criterion related validity with interview-based diagnoses, convergent validity with risk factors for eating pathology, and internal consistency. The kappa coefficient reflecting the agreement between the diagnoses from the structured interview and the EDDS is .93 for anorexia nervosa; the sensitivity, specificity, positive predictive value, negative predictive value, and accuracy are all above .93. The kappa coefficient that denotes the agreement between the diagnoses from the structured interview and the EDDS is .81 for bulimia nervosa; the sensitivity, specificity, positive predictive value, negative predictive value, and accuracy are all above .81. Finally, the kappa coefficient reflecting the agreement between the diagnoses from the structured interview and the EDDS is .74 for binge-eating disorder; the sensitivity, specificity, positive predictive value, negative predictive value, and accuracy are all above .77 (Stice et al.).

The one-week test-retest kappa coefficient is .95 for anorexia nervosa diagnoses, and the overall accuracy rate was .98. The one-week test-retest kappa coefficient is .71 for bulimia nervosa diagnoses, and the overall accuracy rate is .91. For binge-eating disorder, the one-week test-retest kappa coefficient is .75, and the overall accuracy rate is .89. The correlation coefficient reflecting the one-week test-retest reliability is .87 for this composite (r = .87; Stice et al., 2000).

Test-retest kappa coefficients are strong according to the criteria proposed by Fleiss (1981). This scale also compares well to validated psychiatric interviews such as the Structured Clinical Interview for DSM-III-R (SCID), which has test-retest kappa coefficients from .80 to .90 for eating disorder diagnoses (Pike, Loeb, & Walsh, 1995).

Eating beliefs. A copy of the Eating Belief Questionnaire (EBQ; Mukina et al., 1998; Appendix B) was given to each participant to assess for beliefs about eating. The EBQ consists of 37 statements designed to evaluate rational and irrational beliefs about eating. This survey asks participants to rate how much they agree with 37 statements along a five-point continuum, with 1 being "strongly disagree" and 5 being "strongly agree." The 37 statements fall within one of four factors: Science, Salves, Superstitions, and Stereotypes. Science beliefs are those backed by empirical literature, such as "Your body will retain water while consuming a diet high in sodium." Salves are foods that have magical properties and impart benefits to the consumer, such as, "Drinking tea will help you lose weight." Superstitions are categorized as eating beliefs that have little or no empirical support, such as, "If you work with food (e.g., food store, deli, etc.) you can gain weight by absorbing fat and calories." Stereotypes are beliefs about a certain type of individual, in this case, typically those who suffer from eating disorders, such as, "People with eating disorders are just vain." The two-week test-retest reliabilities for the factors range from $r = .62$ to $r = .81$, with an overall reliability of $r = .77$. All reliabilities are significant at the $p < .001$ level (Grieve et al., 1999).

Self-Objectification. A copy of The Self-Objectification Questionnaire (TSOQ; Noll & Fredrickson, 1997; Appendix C) was given to each participant to assess for trait self-objectification. The TSOQ is based on objectification theory (Fredrickson & Roberts, 1997) and the Body Esteem Scale (Franzoi & Shields, 1984) and consists of 10 items in two categories: appearance-based and competence-based. Appearance-based items focus on observable body attributes (e.g., sex appeal, measurements, weight, physical attractiveness, and muscle tone) and competence-based items focus on unobservable

body attributes (strength, health, stamina/energy level, physical fitness, and physical coordination). Because objectification theory suggests that women experience the negative consequences of self-objectification as a result of being concerned with physical appearance, regardless of whether they are satisfied or dissatisfied with their bodies, the TSOQ assesses concern with appearance without a judgmental component, such as in the Body Esteem Scale (Fredrickson, Roberts, Noll, Quinn, & Twenge, 1998; Miner-Rubino, et al., 2002).

Participants are asked to rank order 10 body attributes from that which has the greatest impact on their physical self-concept (ranked as a "9"), to that which has the least impact on their physical self-concept (ranked as a "0"). Scores are then obtained by separately totaling the ranks for appearance-based items and competence-based items, and then subtracting the sum of competence ranks from the sum of appearance ranks. Scores may range from – 25 to 25, with higher scores indicating a greater emphasis on appearance, interpreted as higher trait self-objectification (Fredrickson et al., 1998).

Consistent with objectification theory, trait self-objectification scores are not correlated with obesity, supporting that women can be concerned with their physical appearance regardless of body size (Noll & Fredrickson, 1996). Additionally, the TSOQ displays satisfactory construct validity (Noll, 1996) and scores on the measure positively correlate with other measures of preoccupation with observable aspects of the physical self, body-size dissatisfaction, and the tendency to adopt an observer's perspective on the body (Miner-Rubino, Twenge, & Fredrickson, 2002; Noll & Fredrickson, 1998). Specifically, the TSOQ correlates with The Appearance Anxiety Questionnaire (r = .52; Dion, Dion, & Keelan, 1990), moderately with the Body Image Assessment (r =. 46; Noll

& Fredrickson, 1998; Williamson, Davis, Bennett, Goreczny, & Gleaves, 1985), and is moderately correlated with the surveillance subscale of the Objectified Body Consciousness Scale ($r = .63$, $p < .001$; McKinley & Hyde, 1996; Miner-Rubino, et al., 2002). This moderate correlation with the Body Image Assessment is also seen as support of the objectification theory assertion that self-objectification is not limited to women who are dissatisfied with their physical appearance.

Procedure

Prior to the start of NPC formal recruitment in August 2005, the sorority group research participants were approached at a brief meeting hosted by their designated recruitment group guides and the Panhellenic officers in a designated conference room in the university center. During this meeting, the investigator made a brief presentation on the purpose and timeline of the research study. Participants were informed that the study was assessing the attitudes, beliefs, and behavior patterns of different groups of college women and would take place over the course of one academic year with five total assessments being made. The first assessment took place following the informational meeting (August), the second assessment took place four weeks following the conclusion of the recruitment process (September), the third occurred approximately two weeks after sorority initiation (November), the fourth occurred at the beginning of the second semester (February), and the final assessment was administered during the final month of school for the academic year (April).

The investigator then met with each group of participants in the conference room for approximately 15 to 20 minutes. At this time, participants were asked to choose a pseudonym to use for identification purposes throughout the study and asked to complete

the demographics portion of the survey, the EDDS, the EBQ, and the TSOQ. Prior to leaving, participants were asked to provide their e-mail address as a means of future notifications. They were then given a form documenting their participation in the research study for potential extra credit and contact/referral information regarding any questions or concerns about the study.

For the remaining four assessments, participants were contacted via e-mail with information regarding the Internet link for the study questionnaires. Participants were asked to sign on to the server using their previously chosen pseudonyms and complete electronic versions of the EDDS, the EBQ, and the TSOQ.

Because the control group was not participating in the sorority recruitment process, the investigator made short presentations in several large introductory courses on the same campus to inform and recruit non-sorority member women for the study. Due to the large number of first year undergraduates participating in the sorority recruitment process, only women between the ages of 18 and 25 were accepted for the control group. Interested women were provided with the study name and university study board web page information in order to sign-up for participation times for the first assessment. The order of the assessment was conducted in the same manner as the sorority recruitment group. For subsequent assessments, participants were also notified by e-mail as to the location and dates of the four remaining assessments.

Results

To assess the changes in weight, self-objectification, eating beliefs, and eating disorders among sorority members and non-sorority members over the course of the academic year, several analyses were used. First, a series of independent sample t-tests was utilized to assess for potential differences between sorority members and non-sorority members for each of the variables, specifically, age, height, years of education, weight, self-objectification, eating beliefs, and eating disorder symptoms, at the start of the study in August.

The effects of time were analyzed for sorority members and non-sorority members using a 2 (sorority membership: sorority vs. non-sorority) x 5 (time: August vs. September vs. November vs. February vs. April) repeated measures analysis of variance (ANOVA) approach for all of the dependent variables. The interactions of sorority membership and time were analyzed. Correlation matrices for the dependent variables, specifically, weight, self-objectification, eating beliefs, and eating disorder symptoms, at each data collection point can be found in Tables 1, 2, 3, 4, and 5, respectively.

Table 1

Intercorrelations Between Study Variables in August

Variable	1	2	3	4	5	6	7	8
1. Sorority Membership	-	-.148	.073	-.082	.031	-.095	-.026	.190
2. Weight			-.245	-.039	.173	.078	.164	-.008
3. Stereotypes			-	.448	.093	-.093	.124	.320
4. Superstitions				-	.163	.189	.149	.329
5. Salves					-	.299	.051	-.123
6. Science						-	.006	-.156
7. Self-Objectification							-	.129
8. Eating Disorders								-

Table 2

Intercorrelations Between Study Variables in September

Variable	1	2	3	4	5	6	7	8
1. Sorority Membership	-	-.037	.027	-.169	-.012	-.207	-.001	.026
2. Weight		-	-.143	-.161	-.060	.005	.303	.339
3. Stereotypes			-	.165	.367	.067	-.023	.255
4. Superstitions				-	.241	.455	-.028	-.163
5. Salves					-	.440	.181	.147
6. Science						-	.121	.093
7. Self-Objectification							-	.046
8. Eating Disorders								-

Table 3

Intercorrelations Between Study Variables in November

Variable	1	2	3	4	5	6	7	8
1. Sorority Membership	-	-.045	-.032	-.138	.108	.029	.061	-.021
2. Weight		-	-.130	-.213	-.143	.005	.393	.180
3. Stereotypes			-	.365	.440	-.225	-.178	.061
4. Superstitions				-	.387	.195	-.043	-.071
5. Salves					-	.341	-.140	.022
6. Science						-	-.045	.053
7. Self-Objectification							-	-.040
8. Eating Disorders								-

Table 4

Intercorrelations Between Study Variables in February

Variable	1	2	3	4	5	6	7	8
1. Sorority Membership	-	-.053	-.149	.025	.243	.013	-.037	.033
2. Weight		-	-.141	-.190	-.221	.029	.099	.271
3. Stereotypes			-	.413	.454	.253	-.016	.122
4. Superstitions				-	.389	.297	.128	-.154
5. Salves					-	.482	-.033	-.019
6. Science						-	.026	-.202
7. Self-Objectification							-	-.095
8. Eating Disorders								-

Table 5

Intercorrelations Between Study Variables in April

Variable	1	2	3	4	5	6	7	8
1. Sorority Membership	-	.032	-.046	.016	.206	-.071	-.149	.033
2. Weight		-	-.051	-.059	-.250	-.066	.225	.332
3. Stereotypes			-	.490	.278	.249	-.061	.055
4. Superstitions				-	.542	.600	.048	-.010
5. Salves					-	.650	-.069	.085
6. Science						-	-.072	-.141
7. Self-Objectification							-	.152
8. Eating Disorders								-

Baseline Demographics

The means and standard deviations for baseline demographics can be found in Table 6. No significant differences were found between sorority members and non-sorority members with regard to height, t (41) = -0.925, p = 0.178. However, significant differences between the two groups of women were found in age, t (41) = 1.335, $p < 0.05$ and years of education, t (41) = 1.514, $p < 0.05$), such that non-sorority members were older and had more education than sorority members at the start of the study.

Table 6

Means and Standard Deviations of Baseline Demographics for Sorority Members and Non-sorority Members

Variable	Sorority Members	Non-sorority Members
	M (SD)	M (SD)
Height	65.42 (2.678)	63.87 (5.512)
Age	18.08 (0.515)	18.42 (0.807)
Years of Education	12.08 (0.289)	12.39 (0.667)

Weight

The means and standard deviations for weight can be found in Table 7. No significant differences were found between sorority members and non-sorority members with regard to weight (t (41) = - 0.961, p = 0.469) at the start of the study or over the course of the study as a whole, F (4,38) = 2.559, p = 0.054. Additionally, although there were no significant findings within groups with regard to weight when all five assessments were considered as a whole, F (4, 38) = 0.115, p = 0.736, partial η^2 = 0.003, a significant difference was found between scores in August and scores in September, F (1, 41) = 9.358, $p < 0.01$, partial η^2 = 0.186. However, this change over time is not dependent on sorority membership, F (1, 41) = 3.055, p = 0.088, partial η^2 = 0.069, as all women weighed more in September than they did in August. A plot of the estimated marginal means of weight can be seen in Figure 1. For more information, see Tables 8 and 9, respectively.

Table 7

Means and Standard Deviations of Weight, Self-Objectification and Eating Disorder Symptoms for Sorority Members and Non-sorority Members

Time	Weight	Self-Objectification	Eating Disorders
	M (SD)	M (SD)	M (SD)
Sorority Members			
August	136.75 (34.825)	-1.50 (14.774)	0.333 (0.492)
September	149.17(38.800)	-0.50 (8.949)	0.250 (0.452)
November	149.33 (38.415)	-1.50 (10.791)	0.083 (0.289)
February	149.75 (38.320)	-2.00 (6.238)	0.083 (0.289)
April	150.92 (34.697)	-1.67 (9.355)	0.083 (0.289)
Non-sorority Members			
August	148.84 (37.778)	-0.77 (12.632)	0.161 (0.374)
September	152.23 (37.574)	-0.48 (11.650)	0.226 (0.425)
November	153.00 (37.461)	-2.73 (8.785)	0.097 (0.301)
February	154.19 (38.351)	-1.32 (9.020)	0.065 (0.250)
April	148.35 (37.582)	1.13 (8.180)	0.065 (0.250)

Figure 1. Estimated marginal means of weight across time for sorority members and non-sorority members.

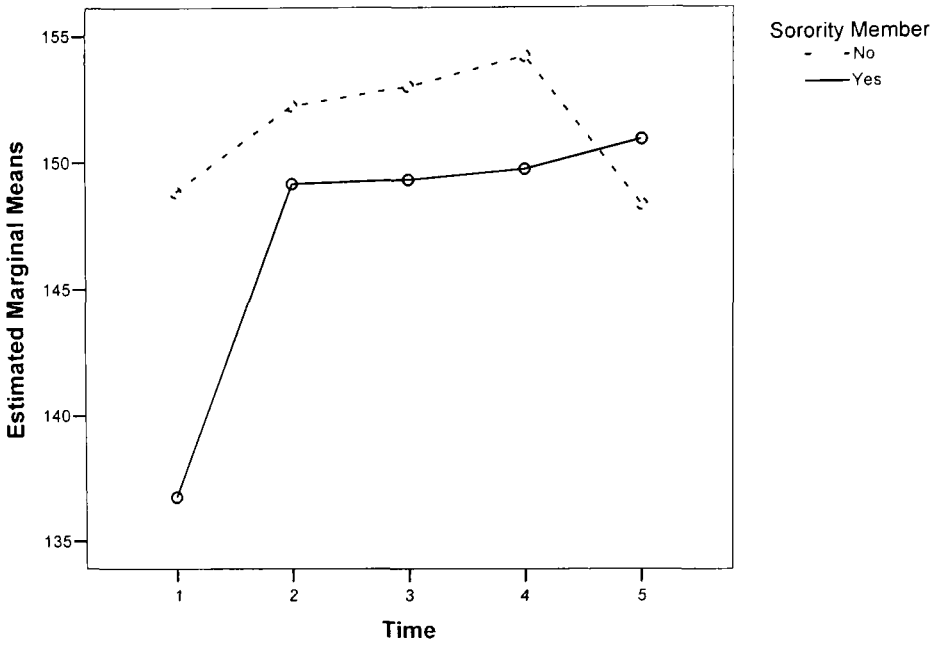

Table 8

Repeated Measures ANOVA Results for Time and Sorority Membership on Weight for the Academic Year

Variable	df	Error df	*F*	Partial η^2
Multivariate Tests				
Time	4	38	2.559	0.212
Time x Recruitment	4	38	1.251	0.116
Univariate Tests				
Recruitment	4	38	0.115	0.003

No significant results

Table 9

Repeated Measures ANOVA Results for Time and Sorority Membership on Weight from August to September

Variable	df	Error df	*F*	Partial η^2
Multivariate Tests				
Time	1	41	9.358**	0.186
Time x Recruitment	1	41	3.055	0.069
Univariate Tests				
Recruitment	1	41	0.134	0.009

** $p < 0.01$

Self-Objectification

The means and standard deviations for self-objectification can be found in Table 7. No significant differences were found between sorority members and non-sorority members with regard to self-objectification at the start of the study, $t\,(41) = 0.162$, $p = 0.848$, or over the course of the study as a whole, $F\,(1, 39) = 1.419$, $p = 0.736$, partial $\eta^2 = 0.003$. Additionally there were no significant findings within groups across time with regard to self-objectification, $F\,(1, 39) = 0.500$, $p = 0.716$, partial $\eta^2 = 0.053$. Further, no interactions were found. A plot of the estimated marginal means of self-objectification can be seen in Figure 2. See Table 10 for more information.

Figure 2. Estimated marginal means of self-objectification across time for sorority members and non-sorority members.

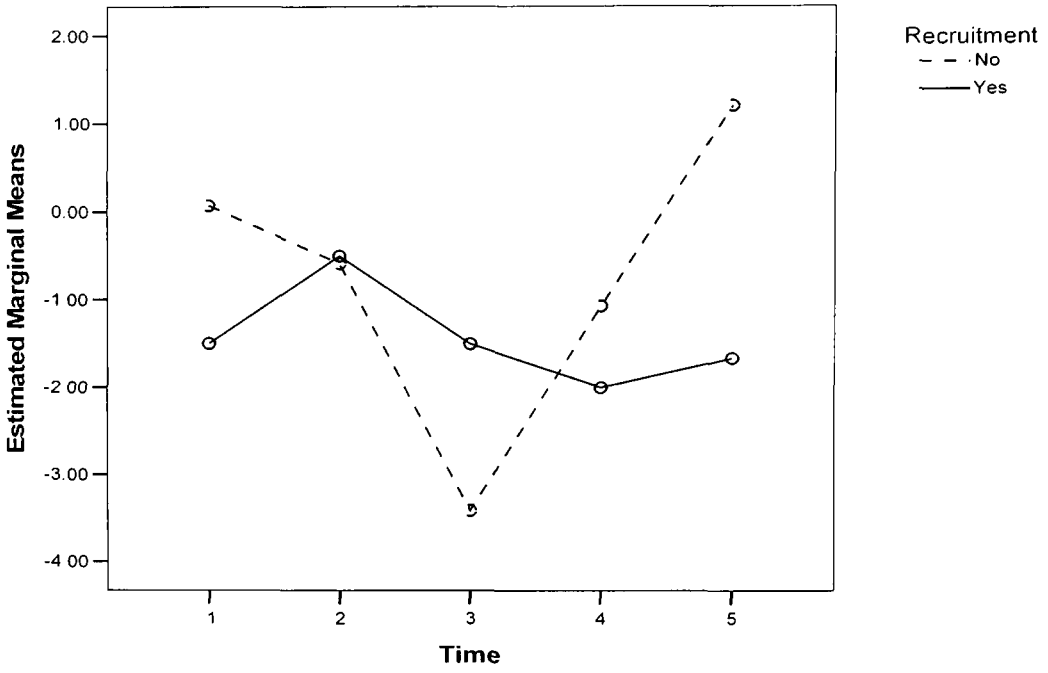

Table 10

Repeated Measures ANOVA Results for Time and Sorority Membership on Self-Objectification

Variable	df	Error df	*F*	Partial η^2
Multivariate Tests				
Time	4	36	0.500	0.053
Time x Recruitment	4	36	0.503	0.053
Univariate Tests				
Recruitment	1	39	1.419	0.003

No significant results

Eating Beliefs

Stereotypes. The means and standard deviations for the EBQ Stereotypes subscale scores can be found in Table 11. Reliability coefficients for EBQ Stereotypes subscale scores at all data collection points can be found in Table 12. No significant differences were found between sorority members and non-sorority members with regard to stereotypical eating beliefs at the start of the study, t (40) = 0. 466, p = 0.546, or over the course of the study as a whole, F (4, 37) = 0.107, p = 0.745, partial η^2 = 0.003. Additionally, there were no significant findings within groups across time with regard to eating belief stereotypes, F (1, 40) = 1.271, p = 0.299, partial η^2 = 0.121. Further, no main effects or interactions were found. A plot of the estimated marginal means of EBQ Stereotypes can be seen in Figure 3. See Table 13 for more information.

Table 11

Means and Standard Deviations of the Eating Beliefs Questionnaire Subscales for Sorority Members and Non-sorority Members

Time	Stereotypes	Superstitions	Salves	Science
	M (SD)	M (SD)	M (SD)	M (SD)
Sorority Members				
August	22.83 (4.629)	23.50 (2.541)	19.92 (3.450)	21.83 (2.691)
September	21.08 (4.078)	23.00 (3.275)	20.75 (3.166)	21.92 (2.466)
November	20.92 (4.122)	22.50 (3.943)	21.67 (3.798)	22.67 (2.605)
February	19.83 (4.064)	23.67 (2.570)	22.67 (2.425)	22.50 (2.236)
April	21.58 (6.141)	23.92 (2.575)	22.42 (2.999)	21.67 (3.055)
Non-sorority Members				
August	22.03 (5.199)	24.23 (4.463)	19.65 (4.215)	22.39 (2.642)
September	20.84 (4.220)	24.55 (4.434)	20.84 (3.465)	23.10 (2.599)
November	21.39 (7.383)	23.74 (4.155)	20.71 (4.133)	22.48 (2.965)
February	22.03 (7.513)	23.45 (4.381)	20.71 (3.926)	22.42 (3.149)
April	22.48 (9.929)	23.77 (4.624)	20.57 (4.408)	22.19 (3.506)

Table 12

Reliability Coefficients for EBQ Subscale Scores for the Academic Year

EBQ Subscale	August	September	November	February	April
Stereotypes	.65	.64	.88	.88	.94
Superstitions	.56	.64	.59	.56	.66
Salves	.68	.55	.71	.62	.75
Science	.22	.25	.43	.36	.56

Figure 3. Estimated marginal means of eating belief stereotypes across time for sorority members and non-sorority members.

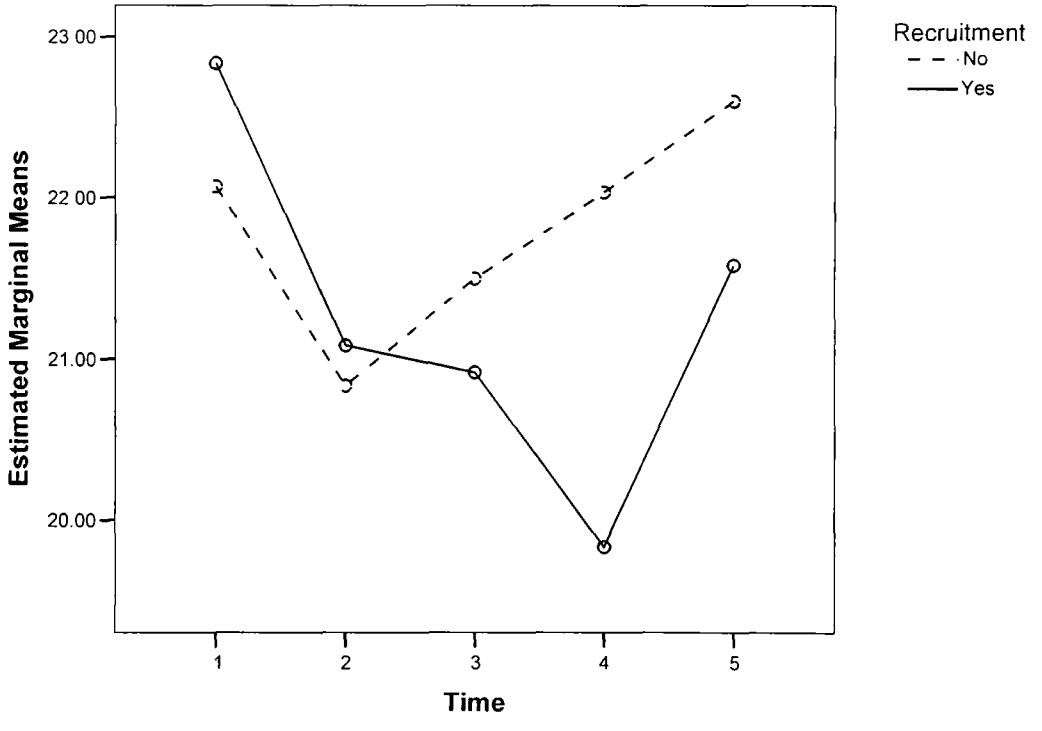

Table 13

Repeated Measures ANOVA Results for Time and Sorority Membership on Eating Belief Stereotypes

Variable	df	Error df	*F*	Partial η^2
Multivariate Tests				
Time	4	37	1.271	0.121
Time x Recruitment	4	37	0.548	0.056
Univariate Tests				
Recruitment	1	40	0.107	0.003

No significant results

Superstitions. The means and standard deviations for the EBQ Superstitions subscale scores can be found in Table 11. Reliability coefficients for EBQ Superstitions subscale scores at all data collection points can be found in Table 12. No significant differences were found between sorority members and non-sorority members with regard to superstitious eating beliefs at the start of the study, t (41)= 0.529, p = 0.109, or over the course of the study as a whole, F (4, 38) = 0.291, p = 0.593, partial η^2 = 0.007. Additionally, there were no significant findings within groups across time with regard to eating belief superstitions, F (1, 41) = 0.612, p = 0.656, partial η^2 = 0.061. Further, no interactions were found. A plot of the estimated marginal means of EBQ Superstitions can be seen in Figure 4. See Table 14 for more information.

Figure 4. Estimated marginal means of eating belief superstitions across time for sorority members and non-sorority members.

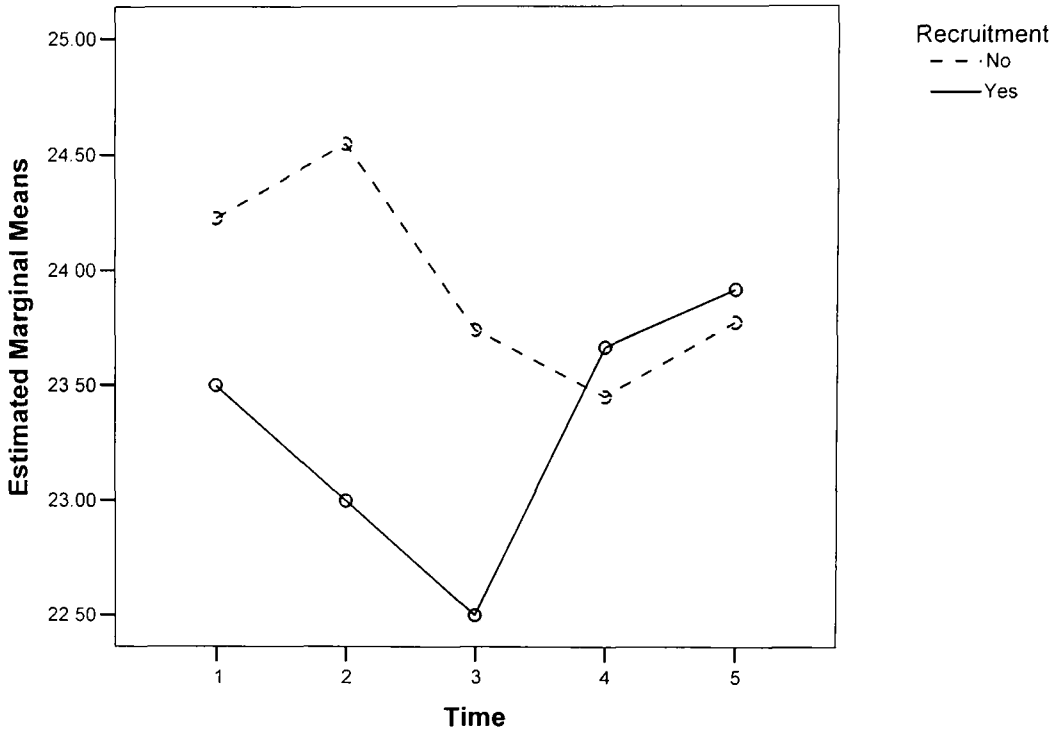

Table 14

Repeated Measures ANOVA Results for Time and Sorority Membership on Eating Belief Superstitions

Variable	df	Error df	*F*	Partial η^2
Multivariate Tests				
Time	4	38	0.612	0.061
Time x Recruitment	4	38	0.878	0.085
Univariate Tests				
Recruitment	1	41	0.291	0.007

No significant results

Salves. The means and standard deviations for the EBQ Salves subscale scores can be found in Table 11. Reliability coefficients for EBQ Salves subscale scores at all data collection points can be found in Table 12. No significant differences were found between sorority members and non-sorority members with regard to eating belief salves at the start of the study, t (41) = 0.198, p = 0.592, or over the course of the study as a whole, F (4, 37) = 0.888, p = 0.352, partial η^2 = 0.022. Within groups, there were significant findings across time with regard to eating belief salves, F (1, 40) = 2.837, $p <$ 0.05, partial η^2 = 0.235. However, this change over time was not dependent on sorority membership, F (4, 37) = 1.410, p = 0.250, partial η^2 = 0.132, as all women were more likely to endorse the magical properties of food over the course of the academic year. A plot of the estimated marginal means of EBQ Salves can be seen in Figure 5. See Table 15 for more information.

Figure 5. Estimated marginal means of eating belief salves across time for sorority members and non-sorority members.

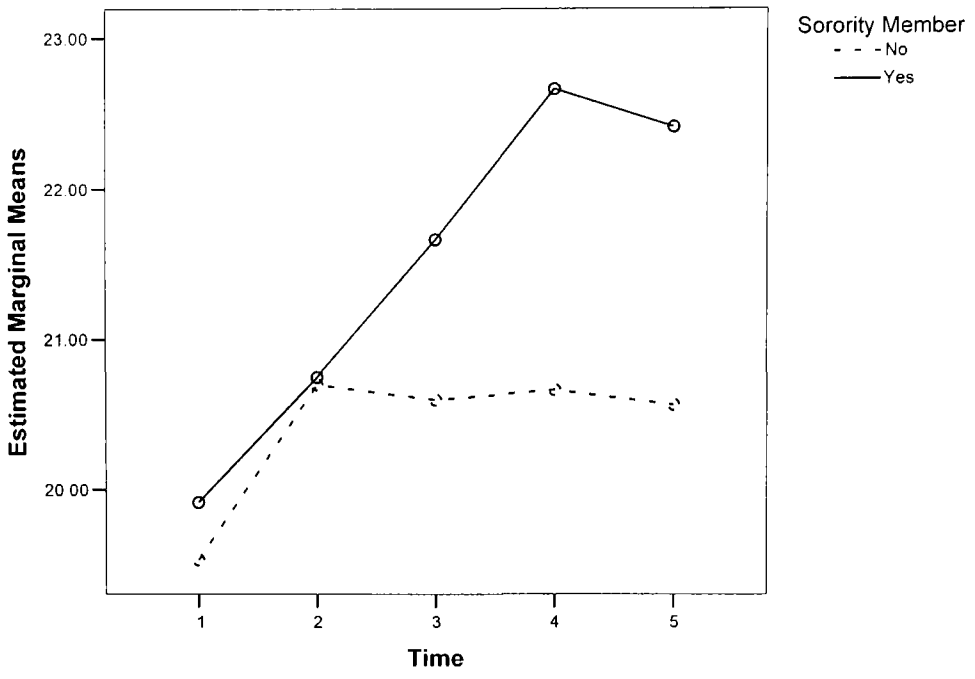

Table 15

Repeated Measures ANOVA Results for Time and Sorority Membership on Eating Belief Salves

Variable	df	Error df	*F*	Partial η^2
Multivariate Tests				
Time	4	37	2.837*	0.235
Time x Recruitment	4	37	1.410	0.132
Univariate Tests				
Recruitment	1	40	0.888	0.022

* $p < 0.05$

Science. The means and standard deviations for the EBQ Science subscale scores can be found in Table 11. Reliability coefficients for EBQ Science subscale scores at all data collection points can be found in Table 12. No significant differences were found between sorority members and non-sorority members with regard to eating belief science at the start of the study, t (41) = 0.613, p = 0.907 or over the course of the study as a whole, F (4, 38) = 0.253, p = 0.617, partial η^2 = 0.006. Additionally, there were no significant findings within groups across time with regard to eating belief science, F (1, 41) = 0.804, p = 0.530, partial η^2 = 0.078. Further, no interactions were found. A plot of the estimated marginal means of EBQ Science can be seen in Figure 6. See Table 16 for more information.

Figure 6. Estimated marginal means of eating belief science across time for sorority members and non-sorority members.

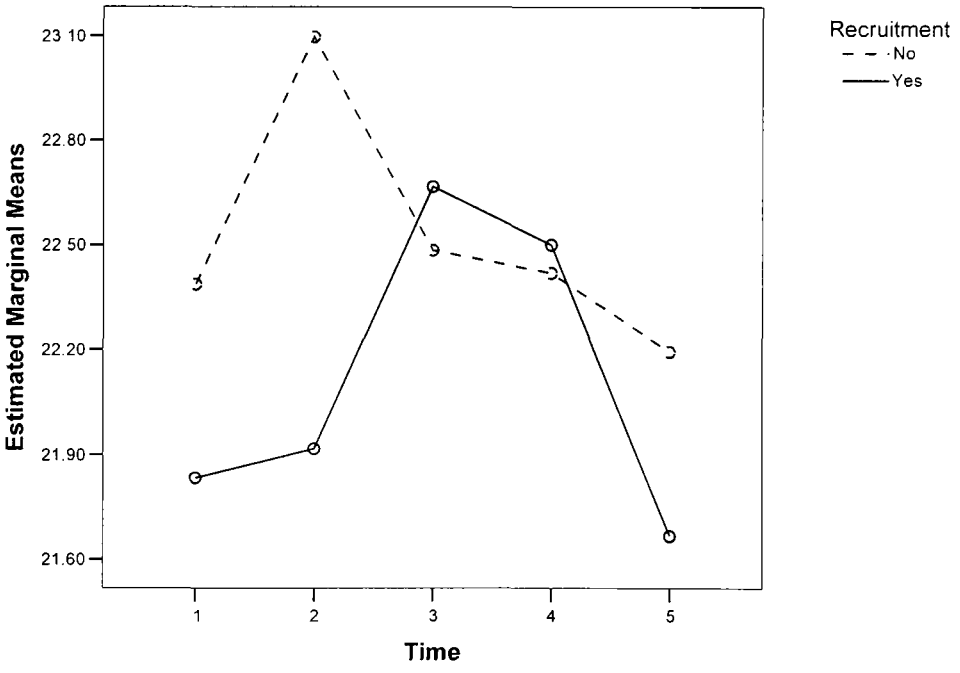

Table 16

Repeated Measures ANOVA Results for Time and Sorority Membership on Eating Belief Science

Variable	df	Error df	*F*	Partial η^2
Multivariate Tests				
Time	4	38	0.804	0.078
Time x Recruitment	4	38	1.266	0.118
Univariate Tests				
Recruitment	1	41	0.253	0.006

No significant results

Eating Disorder Symptoms

The means and standard deviations for eating disorder symptoms can be found in Table 7. Significant differences were found between sorority members and non-sorority members with regard to eating disorder symptoms, t (41) = 1.237, $p < 0.05$, at the start of the study but not over the course of the study as a whole, F (3, 39) = 0.243, $p = 0.625$, partial $\eta^2 = 0.006$. Within groups, there were significant findings across time with regard to eating disorder symptoms, F (1, 41) = 5.046, $p < 0.01$, partial $\eta^2 = 0.280$. However, this change over time was not dependent on sorority membership, F (3, 39) = 0.632, $p = 0.599$, partial $\eta^2 = 0.046$, as both groups reported fewer eating disorder symptoms over the course of the academic year. A plot of the estimated marginal means of weight can be seen in Figure 7. For more information, see Table 17.

Figure 7. Estimated marginal means of eating disorder symptoms across time for sorority members and non-sorority members.

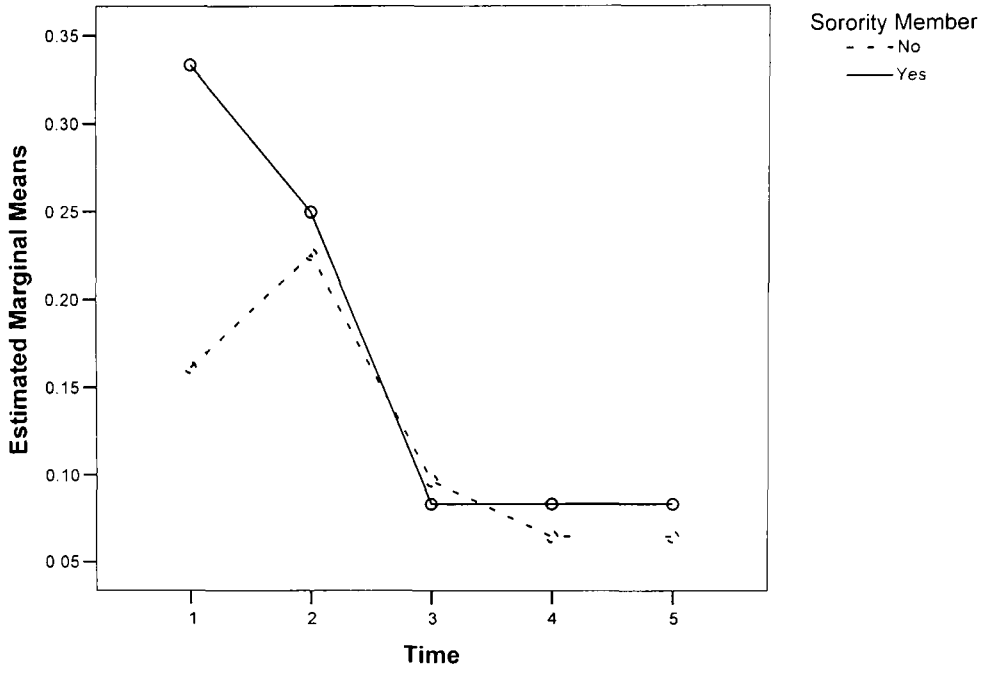

Table 17

Repeated Measures ANOVA Results for Time and Sorority Membership on Eating Disorder Symptoms

Variable	df	Error df	*F*	Partial η^2
Multivariate Tests				
Time	3	39	5.046**	0.280
Time x Recruitment	3	39	0.632	0.046
Univariate Tests				
Recruitment	1	41	0.243	0.006

** $p < 0.01$

Discussion

The purpose of this study was to continue the investigation of sorority women and their eating patterns by conducting a longitudinal study, consisting of five assessments over the course of one academic year, to assess whether the sorority women who are engaging in maladaptive eating behaviors and thought processes had these problems before joining a sorority or developed them later on as a member of the sorority. In addition, the constructs of weight, self-objectification, and eating beliefs were examined. Specifically, this study was designed to answer the following research questions. First, do sorority women and non-sorority women differ in regards to weight, self-objectification, eating beliefs, or eating disorder symptoms at the start of or throughout the study? Additionally, do these initial reported weights, self-objectification scores, eating beliefs, or eating disorder symptoms vary over time for either group? Finally, is sorority membership a factor in any of these changes?

There were no significant differences for self-objectification or the eating beliefs subscales of stereotypes, superstitions, or science. However, significant findings were shown for weight, the salves eating belief subscale, and reported eating disorder symptoms across time.

Weight

While there were no significant differences in weight between groups at the start or throughout the study, there was a significant difference for both groups between the August and September data collections, such that both groups reported weighing more in September than in August. While the lack of differences between groups suggests that the two groups are not actually different and is consistent with most recent studies

(Alexander, 1998; Allison & Parks, 2004; Wagner Hobbs et al., 2004), the weight gain between August and September could occur for a variety of reasons, including less meal structure, greater access to and consumption of less healthy foods, or even a decrease in prior levels of exercise; all of these are anecdotally associated with starting college (Cash & Green, 1986; Hesse-Biber, 1989). Additionally, while the women reported a gain in weight between August and September, in general, this weight gain was less than the 15 pounds stereotypically associated with the first year of college. This finding and the lack of significant gains over the course of the academic year as a whole are more consistent with several studies dismissing the concept of the "freshman 15" (Hodge, Jackson, & Sullivan, 1993; Hoffman, Policastro, Quick, & Lee, 2006; Megel, Hawkins, Sandstrom, Hoefler, & Willrett, 1994). Also, for the first data collection point, surveys were filled out in person, which may have lead to a sense of evaluation on the part of the participants regarding weight and physical appearance. This may have invariably influenced reported weights for all women in the study and contributed to the lower reported weights in August and an artificial increase in reported weights in September. However, it is important to note that the small sample size contributes to an overall lack of power for the results and makes any interpretation of the data preliminary at this point.

Self-Objectification

No significant differences were found between sorority members and non-sorority members, which would suggest that the two groups do not differ on this construct. However, while the interpretation of the results is entirely preliminary at this point (given the high effect size, small sample size, and overall patterns of the current results), it is reasonable to suggest that if a greater sample size were available a pattern may emerge

such that non-sorority members gradually decrease in self-objectification over the course of the academic year whereas sorority members ultimately increase on the same construct.

Eating Beliefs

The lack of differences between groups for the eating belief subscales is consistent with most recent studies (Alexander, 1998; Allison & Park, 2004; Wagner Hobbs et al., 2004) and suggests that the two groups are not actually different. However, the results of this study do contradict the Wagner Hobbs et al. study through the lack of an increase in the endorsement of all eating beliefs at the second data collection point, which occurred after the Thanksgiving holiday, but before Christmas. While this difference may signify an underlying difference between the two study samples (traditional versus non-traditional college students with regard to age), it may also be the result of an overall cultural change or also a change in the research design to include more data collection points. However, the increase in endorsement of salves across the academic year for all women may suggest a repeated exposure to these flawed eating beliefs and is consistent with research regarding the mere-exposure effect (Bornstein, 1989), which argues that the more exposure one has to a particular stimulus, the more they will tend to like it. Further, as this increase was seen regardless of sorority membership status, this would suggest that all women are being exposed to the same negative influences regarding eating beliefs, and consistent with a number of recent studies, a possible influence is media (Green & Pritchard, 2003; Harrison & Cantor, 1997; Sira, 2005; Vartanian, Giant, & Passino, 2001). This increase in endorsement of salves combined with a lack of findings for the other eating beliefs would also suggest

that some unique characteristic of salves not found in the other eating beliefs. One possibility is that salves by description are almost believable and can be mistaken for science, which often leads to the inclusion of salves as a topic of dieting in many women's magazines (i.e., the grapefruit diet) and further supports the need for media consumption to be included as a variable in future studies addressing eating patterns. Additionally, while the current results show a lack of differences over the course of the academic year with regards to sorority membership (given the high effect size, small sample size, and overall patterns of the results), it is reasonable to suggest that if a greater sample size were available a pattern may emerge such that sorority members show a greater and consistent increase in eating beliefs salves over the course of the academic year whereas non-sorority members show an initial increase followed by a lack of change on the same construct. Similar patterns were found for the eating beliefs of superstitions and science, such that sorority members increased and non-sorority members decreased in endorsement of eating belief superstitions and non-sorority members displayed a consistent and greater endorsement of eating belief science than sorority members over the course of the academic year. Likewise, a pattern emerged for eating belief stereotypes such that non-sorority members gradually increased in endorsement of stereotypical eating beliefs over the course of the academic year whereas sorority members ultimately decreased on the same construct.

Eating Disorder Symptoms

While the sorority members displayed higher rates of eating disorder symptoms at the start of the study, this difference disappeared by the second data collection point and all women reported experiencing statistically significantly fewer instances of eating

disorder symptoms over the course of the academic year. These initial differences could be for a variety reasons. For example, many sorority recruitment processes take place prior to or shortly following the start of the academic year. For both potential and current sorority members this process is much like an interview comprising significant social pressure, either real or perceived. This social pressure could lead to women being more concerned with their physical appearance to the point of disordered eating patterns and is consistent with the results of the McKnight Longitudinal Risk Factor Study (2003). However, once a woman has been offered membership, she may no longer feel the need to impress the women she now chooses to call "sisters" with physical appearance. Additionally, the close relationships often formed within a sorority could simply lend to positive eating expectations rather than the stereotypical negative ones. This contradicts the findings of Crandall with regard to the social contagion of binge eating, as the women in this study were less likely to display eating disorder symptoms over time rather than the increase that Crandall found. However, as Crandall (1989) only surveyed two of the sororities on that particular college campus, the lack of a random sample may have contributed to those original findings.

Ultimately, the lack of differences between sorority members and non-sorority members over time is consistent with most recent studies (Alexander, 1998; Allison & Park, 2004; Wagner Hobbs et al., 2004) and continues to suggest that the two groups do not actually differ. While the initial differences between groups may be the source of stereotyping for sorority members, the lack of differences between groups over time suggests that sorority women may not actually be at a higher risk for disordered eating, at least solely due to their sorority membership.

More significantly than differences or lack of differences is that at the start of the study, one out of every five women reported some form of disordered eating, with full-threshold and subthreshold bulimia accounting for 78% of that disordered eating. The finding that 16.3% of the women endorsed bulimic symptoms easily fits with the findings of previous studies (Mintz & Betz, 1988; Powers, Schulman, Gleghorn, & Prange, 1987), and it suggests some overreaching negative influence on the eating behaviors of incoming college students.

Limitations and Future Research

A small sample size and resulting lack of power due to attrition is the most notable limitation of this study, as it is with many longitudinal studies. Although the study began with over 300 total participants, only 43 women completed the surveys at all five data collections. Additionally, an analysis of all participants at the start of the study shows that many of the women who reported disordered eating did not return for the second analysis, which may have also influenced the eating disorders analysis. This in turn limits the generalizability of the results within the current statistical analysis of repeated measures ANOVA. A future direction for this particular line of research would include a more advanced analysis of the available data through structural equation modeling in an attempt to use all 300 of the initial participants.

Additionally, the current lack of an explanation, through self-objectification theory, for the acquisition and ultimate decline in eating disorder symptoms over the course of the academic year for all women suggests the need for inclusion of other variables such as media exposure and drive for thinness in future research. Finally, the general lack of a significant increase in symptoms for either group over time would

suggest that those individuals with disordered eating patterns had these patterns of eating prior to attending college or pledging a sorority, which further necessitates the need for eating behavior research to start with younger populations.

Conclusion

In general, the preliminary results of this study suggest that, over time, women in sororities do not actually differ from their non-sorority member counterparts with regard to weight, self-objectification, eating beliefs, or eating disorder symptoms. However, these results should be considered both tentative and exploratory in nature given the small sample size, attrition, and lack of power. Ultimately, if the women in these two groups differ, it is on some other construct besides eating. Additionally, the high prevalence of disordered eating among all of the women at the start of the study and the lack of a significant increase in eating disorder symptoms for either group reiterates both the need for educational interventions and the need for eating and body image research to begin with younger populations.

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Appendix A

Please carefully complete all questions.

Over the past 3 months…

	Not at all		Slightly		Moderately		Extremely
1. Have you felt fat?	0	1	2	3	4	5	6
2. Have you had a definite fear that you might gain weight or become fat?	0	1	2	3	4	5	6
3. Has your weight influenced how you think about (judge) yourself as a person?	0	1	2	3	4	5	6
4. Has your shape influenced how you think about (judge) yourself as a person?	0	1	2	3	4	5	6

5. During the past 6 months have there been times when you felt you have eaten what other people would regard as an unusually large amount of food (e.g., a quart of ice cream) given the circumstances?

   YES NO

6. During the times when you ate an unusually large amount of food, did you experience a loss of control (feel you couldn't stop eating or control what or how much you were eating)?

   YES NO

7. How many DAYS per week on average over the past 6 MONTHS have you eaten an unusually large amount of food and experienced a loss of control?

   0 1 2 3 4 5 6 7

8. How many TIMES per week on average over the past 3 MONTHS have you eaten an unusually large amount of food and experienced a loss of control?

   0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

During these episodes of overeating and loss of control did you…

9. Eat more rapidly than normal?
   YES NO

10. Eat until you felt uncomfortably full?
    YES NO

11. Eat large amounts of food when you didn't feel physically hungry?
    YES NO

12. Eat alone because you were embarrassed by how much you were eating?
    YES NO

13. Feel disgusted with yourself, depressed, or very guilty after overeating?
    YES NO

14. Feel very upset about your uncontrollable overeating or resulting weight gain?
    YES NO

15. How many times per week on average over the last 3 months have you made yourself vomit to prevent weight gain or counteract the effects of eating?
    0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

16. How many times per week on average over the last 3 months have you used laxatives or diuretics to prevent weight gain or counteract the effects of eating?
    0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

17. How many times on average over the last 3 months have you fasted (skipped at least 2 meals in a row) to prevent weight gain or counteract the effects of eating?
    0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

18. How many times on average over the last 3 months have you engaged in excessive exercise specifically to counteract the effects of overeating episodes?
    0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

19. How much do you weigh? If uncertain, please give your best estimate. _____lb

20. How tall are you? _____ft _____in

21. Over the past 3 months, how many menstrual periods have you missed?
    1 2 3 4 N/A

22. Have you been taking birth control pills during the past 3 months?
    YES NO

Appendix B

Please complete the following questionnaire as honestly and as accurately as possible.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Fish are "brain foods."	1	2	3	4	5
2. Drinking tea will help you lose weight.	1	2	3	4	5
3. Breakfast will increase your metabolism.	1	2	3	4	5
4. Starchy foods are fattening.	1	2	3	4	5
5. People with eating disorders are just vain.	1	2	3	4	5
6. If you eat a low fat diet, you will lose weight.	1	2	3	4	5
7. If you work with food (e.g., food store, deli, etc.) you can gain weight by absorbing fat and calories.	1	2	3	4	5
8. Fat people are always happy and jolly.	1	2	3	4	5
9. You cannot control how much weight you lose or gain, it is all hereditary.	1	2	3	4	5
10. Diet pills actually work.	1	2	3	4	5
11. A diet high in protein will build muscle and decrease fat.	1	2	3	4	5
12. Thin people are happy.	1	2	3	4	5
13. If you leave half of everything on your plate, you will lose weight.	1	2	3	4	5

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
14. Your body will retain water while consuming a diet high in sodium.	1	2	3	4	5
15. Consuming foods high in caffeine will help suppress your appetite.	1	2	3	4	5
16. Eating carbohydrates (i.e., pasta, potatoes, rice) makes you fat.	1	2	3	4	5
17. Eating one meal a day decreases caloric intake thus producing weight loss.	1	2	3	4	5
18. If I eat a lot of broccoli, I will lose weight.	1	2	3	4	5
19. How many calories you eat is more important than the types of food.	1	2	3	4	5
20. Eating before bed will make you fat.	1	2	3	4	5
21. Repeated weight-loss dieting ensures permanent weight control.	1	2	3	4	5
22. Laxative use and purging are effective techniques for weight lose, and pose only temporary health problems.	1	2	3	4	5
23. A bagel is better than bread.	1	2	3	4	5
24. Eating garlic helps you lose weight.	1	2	3	4	5
25. If you idealize T.V. stars, you will have an eating disorder.	1	2	3	4	5
26. Since female college students are usually intelligent and well educated, they are a low risk group for eating disorders.					

	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
27. Sit-ups will decrease the size of your stomach.	1	2	3	4	5
28. All gardeners are thin people.	1	2	3	4	5
29. People with eating disorders are always skinny.	1	2	3	4	5
30. Vitamins will promote weight loss while dieting.	1	2	3	4	5
31. Drinking or eating food products with Nutrisweet® causes cancer.	1	2	3	4	5
32. Overweight people are lazy overeaters.	1	2	3	4	5
33. Only females have eating disorders.	1	2	3	4	5
34. Eating foods cooked in aluminum pans causes Alzheimer's disease.	1	2	3	4	5
35. All you need is will power to lose weight.	1	2	3	4	5
36. If you improve your posture, you will look thinner.	1	2	3	4	5
37. Eating disorders cannot be fatal.	1	2	3	4	5

Appendix C

In this section we are interested in how people think about their bodies. The questions below identify 10 different body attributes. We would like you to **rank order** these body attributes from that which has the **greatest impact** on your physical self-concept (rank this a "9"), to that which has the **least impact** on your physical self-concept (rank this as a "0").

Note: It does not matter **how** you describe in terms of each attribute. For example, fitness level can have a great impact on your physical self-concept regardless of whether you consider yourself to be physically fit, not physically fit, or any level in between.

Please consider all attributes simultaneously, and record your rank ordering by writing the ranks in the rightmost column.

Important: Do Not Assign The Same Rank To More Than One Attribute!

9 = greatest impact
8 = next greatest impact
:
1 = next to least impact
0 = least impact

When considering your *physical self-concept*...

1. ...what rank to you assign to *physical coordination*? _____
2. ...what rank to you assign to *health*? _____
3. ...what rank to you assign to *weight*? _____
4. ...what rank to you assign to *strength*? _____
5. ...what rank to you assign to *sex appeal*? _____
6. ...what rank to you assign to *physical attractiveness*? _____
7. ...what rank to you assign to *energy level (e.g., stamina)*? _____
8. ...what rank to you assign to *firm/sculpted muscles*? _____
9. ...what rank to you assign to *physical fitness level*? _____
10. ...what rank to you assign to *measurements (e.g., chest, waist, hips)*? _____

Appendix D

Consent to Participate in a Research Study

You are being asked to participate in a project conducted through Western Kentucky University. The University requires that you give your signed agreement to participate in this project.

The investigator will explain to you in detail the purpose of the project, the procedures to be used, and the potential benefits and possible risks of participation. You may ask her any questions you have to help you understand the project. A basic explanation of the project is provided below. Please read this explanation and discuss with the researcher any questions you may have.

If you then decide to participate in the project, please sign on the last page of this form in the presence of the person who explained the project to you. You should be given a copy of this form to keep.

1. PROJECT TITLE

Experiences of College Women

2. PRINCIPAL INVESTIGATOR

Marissa E. Hobbs, graduate student, (marissa.hobbs@wku.edu)
Dr. Frederick Grieve, faculty supervisor, (rick.grieve@wku.edu)
Western Kentucky University, Department of Psychology, (270) 745-4417

3. NATURE AND PURPOSE OF THE PROJECT

The purpose of this study is to assess the attitudes, behaviors, and experiences of college women, and how these may change over time.

4. EXPLANATION OF PROCEDURES

You will be asked to complete two questionnaires regarding demographic information (age, year in school, etc.). You will then be asked to complete five surveys designed to assess attitudes, behaviors, and experiences of college students. This study consists of FIVE sessions over a period of one academic year. Each session will take about 15 minutes.

5. DISCOMFORT AND RISKS

We are looking for your honest answers to these surveys. There is minimal risk that the information on the questionnaire may bring about psychological distress. If this occurs, please inform your researcher. You do not have to answer any question you do not wish to answer.

6. BENEFITS

As a participant in the study, you will be contributing to science and helping researchers gain understanding about how attitudes and behavior patterns change over time for college women. One benefit to you is that extra credit for participation may be granted at the discretion of some class professors. Additionally, following participation in

each assessment, participants will be entered into a drawing for a gift certificate. And, participants who complete all four assessments will be entered into a drawing for an additional gift certificate at the conclusion of the study.

7. CONFIDENTIALITY

All research participants will choose an identification pseudonym at the beginning of the project. Your identity and the identity of all participants will never be revealed in any published or oral presentation of the results of this project. All data from this project will be kept confidential to the extent of the law. All data that is published or presented will be done in a way that does not reveal the identity of a participant.

8. REFUSAL/WITHDRAWAL

Refusal to participate in this study will have no effect on any future services that you may be entitled to from the University. Anyone who agrees to participate in this study is free to withdraw from the study at any time with no penalty.

You understand also that it is not possible to identify all potential risks in an experimental procedure, and you believe that reasonable safeguards have been taken to minimize both the known and potential but unknown risks.

_____ _____

Signature of Participant Date

_____ _____

Witness Date

THE DATED APPROVAL ON THIS CONSENT FORM INDICATES THAT PROJECT HAS BEEN REVIEWED AND APPROVED BY THE WESTERN KENTUCKY UNIVERSITY HUMAN SUBJECTS REVIEW BOARD
Dr. Phillip E. Meyers, Human Protections Administrator
TELEPHONE: (270) 745-4652

Appendix E

Human Subjects Review Board Approval

In future correspondence please refer to HS06-018, August 23, 2005

Marissa Elena Wagner Hobbs
253 TPH
Department of Psychology
WKU

Dear Marissa:
Your revision to your research project, "Experiences of College Women," was reviewed by the HSRB and it has been determined that risks to subjects are: (1) minimized and reasonable; and that (2) research procedures are consistent with a sound research design and do not expose the subjects to unnecessary risk. Reviewers determined that: (1) benefits to subjects are considered along with the importance of the topic and that outcomes are reasonable; (2) selection of subjects is equitable; and (3) the purposes of the research and the research setting is amenable to subjects' welfare and producing desired outcomes; that indications of coercion or prejudice are absent, and that participation is clearly voluntary.
1. In addition, the IRB found that you need to orient participants as follows: (1) signed informed consent is required; (2) Provision is made for collecting, using and storing data in a manner that protects the safety and privacy of the subjects and the confidentiality of the data. (3) Appropriate safeguards are included to protect the rights and welfare of the subjects.
*This project is therefore approved at the Expedited Review Level until
May 15, 2006.*

2. Please note that the institution is not responsible for any actions regarding this protocol before approval. If you expand the project at a later date to use other instruments please re-apply. Copies of your request for human subjects review, your application, and this approval, are maintained in the Office of Sponsored Programs at the above address.

Please report any changes to this approved protocol to this office. Also, please use the stamped Informed Consent documents that are included with this letter. A Continuing Review protocol will be sent to you in the future to determine the status of the project.

Sincerely,

Sean Rubino, M.P.A.
Compliance Manager
Office of Sponsored Programs
Western Kentucky University

cc: HS file number Hobbs HS06-018