Adolescent obesity: A study of the effects of parent attitudes on physical activity

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ADOLESCENT OBESITY: A STUDY OF THE EFFECTS OF
PARENT ATTITUDES ON PHYSICAL ACTIVITY

A Thesis
Presented to the
Faculty of
California State University,
San Bernardino

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts
in
Education:
Health Education

by
John Arthur Fieldhouse
September 2006
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Date: 8-30-06
ABSTRACT

This study examines the relationship between parent attitudes toward physical activity and physical activity in adolescents. The study was conducted with students from a high school in Riverside County, located in southern California. Students completed a survey measuring their physical activity level, exercise self-efficacy, and their attitudes toward exercise. Parents completed surveys measuring only their attitudes toward exercise.

The results of the study indicate that there is not a significant relationship between parental attitudes toward exercise and adolescent physical activity. The results also indicate that parent attitude toward physical activity is positively correlated with exercise self-efficacy in adolescents. The findings suggest that there is no significant difference between adolescent attitudes toward exercise and those of their parents. In addition, the results indicate that gender is not a significant mediator in the effect of parental attitudes toward physical activity on exercise in adolescents. The complete results of the study and the possible implications for research and practice are discussed.
ACKNOWLEDGMENTS

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CHAPTER ONE
INTRODUCTION

Statement of the Problem

Obesity rates among children and adolescents have continued to rise over the last 40 years to alarming levels (Hedley, 2004). The prevalence of overweight children and adolescents in 1970 was 4% and 5% respectively. The most recent findings are that 16% of children and adolescents are overweight and that an equal number are obese. This represents an increase of 45% since 1988 (Hedley, 2004). Despite efforts from the governments, schools, the medical and psychological fields, no clear answer has been found. Recommendations from various agencies point to diet and exercise programs with family components as the answer (Miller, 2004).

Significance

Childhood and adolescent obesity has reached epidemic levels throughout the world (Hedley, 2004). The cost of this epidemic in health care, insurance, psychologically, and physically, is astronomical. The U.S. government estimates the annual cost of obesity to be $117 billion dollars including direct and indirect costs (fitness.gov, 2003). It is the intention of this study to expand the
understanding of parental influence on adolescent physical activity. Increased evidence in this area may be used to guide physical education and healthy weight maintenance program planning toward inclusion of a parental component.

Research Questions

#1. Do parental attitudes toward exercise affect physical activity in adolescents?

#2. Do parental attitudes predict exercise self-efficacy in adolescents?

#3. Do student attitudes differ from parent attitudes towards exercise?

#4. Are there gender differences in the effect of parental attitudes toward exercise?

General Design

A convenience sample from the general population at Beaumont High School was recruited. The participants and their parents were briefed on the study, given the surveys and instructions. Three separate measures were combined to form the 30-item student instrument used in this study. The seven items used to measure student attitude were all that were included in the parent survey. The student and parent surveys are located in Appendix A. Data was entered into SPSS for a variety of analyses to compute results.
Limitations and Delimitations

Limitations

The instruments used in this study were derived from others studies in the field of childhood and adolescent physical activity (Sallis, 1988; Schutz, 1985; YRBSS, 2004). All surveys used in this study are designed to collect self-reported data from within a family. As such, social desirability and recall biases are possible threats to internal validity. The attitude section of the measure contains a possible ceiling effect (Schutz, 1985). The convenience sample was chosen from within one rural high school, limiting the ability of researchers to generalize results. The parent surveys were handled by the students themselves, as they brought them home and back to school, giving them opportunity to complete the survey themselves. To account for this limitation, several parents were randomly called and asked about their participation, confirming a high probability that parents completed their surveys.

The distribution of 327 informed consent forms resulted in N = 107. It is conceivable that the subjects who completed both the parent and the student surveys may not be representative of the population. This may be caused by the fact that their comparatively higher levels
of activity and higher scores on the attitude scale for both student and parent, increased the likelihood of returning all sections of the survey. Thus, creating a self-selection error. Time constraints, due to the end of the school year prevented the researcher acquisition of a larger sample size.

**Delimitations**

This thesis began with the topic of childhood and adolescent obesity (Reynolds, 1990; Robbins, 2004; Dwyer, 1998; McAuley, 1992; Miller, 2002; Dishman, 2004). The causes for obesity were explored in an effort to narrow the focus. Inactivity was found to be one the primary predictors of overweight and obesity. This lead to the literature on psycho-social determinants of physical activity in adolescents.

**Assumptions**

The following assumptions apply in this thesis: Social Cognitive Theory (SCT), (Bandura, 1977) posits that human behavior can be explained as a dynamic, triadic, and reciprocal interaction of personal factors, behavior, and environment. This theory has been supported in studies on adolescent physical activity behaviors, attitudes, and
environmental influences (Trost, 2003; Motl, 2005; Dishman, 2005).

Physical activity burns calories and is therefore an integral part in any program designed to reduce or limit obesity and maintain positive health status.

Definitions of Terms

The following definitions apply in this thesis:

Self-efficacy (SE) is the confidence individuals have in their ability to execute specific behaviors (Bandura, 1997).

The term obesity refers to a Body Mass Index (BMI) of equal to or greater than 30, and overweight describes individuals above a BMI of 25 (AOA, 2005). BMI is calculated as weight in kilograms divided by the square of height in meters. Although BMI is commonly used as a measure for obesity, it is not perfect due the fact that it does not account for muscle mass.

The terms exercise and physical activity will be used interchangeably and are defined as at least 20 minutes of activity that causes one to sweat and breath hard (YRBSS, 2004).
CHAPTER TWO
LITERATURE REVIEW

Obesity in the United States Risk Factors

The literature presents a wide array of risk factors for obesity in childhood and adolescence. Cultural influences including obesity stereotypes and the thin ideal have been found to have an effect on obesity (Klaczanski, 2004). Evolution theory has been used to explain that the cave dwelling ancestors of modern-day sedentary humans were equipped with a physiological defense mechanism against starvation that enabled effective storage of fat. The theory goes on to explain that regardless of the fact that starvation due to lack of food supply is unlikely, our bodies still operate as though it were, storing fat for lean times (Harvard Publications, 2005). Davidson drew from Pavlovian thought positing that changes in diet including sweetened soft drinks and artificially sweetened foods have had negative effects on our ability to control caloric intake (Davidson, 2004).

Regardless of the indirect causes, nearly all weight gain is the result of an imbalance between calories consumed and calories burned (Moran, 1999). Thus,
inactivity and overeating are the primary causes of obesity. The sedentary lifestyle that has developed over the past forty or so years, coupled with the increase in prepackaged and fatty fast foods, and calorie-dense soft-drinks, may well be at the heart of the obesity epidemic. There is considerable epidemiological evidence linking high intake of fatty foods with obesity (Lytle, 2001).

One study of adolescents showed that 42% watch more than two hours of television per day and 13% watch more than five hours per day (Lowry, 2002). TV viewing offers not only a sedentary alternative to more active activities, but also ample time to snack on unhealthy foods. Aside from sleeping, TV viewing represents the single greatest source of inactivity for children.

Stewart (2004) found that only 8% of elementary schools provide the recommended 150 minutes of physical activity per week. Additionally, students who are inactive at school have been found to be inactive outside of school as well. This problem extends into the high schools where enrollment in Physical Education classes decreases with age, and 44% of students do not participate in sports (Beets, 2005).
Medical and Psychosocial Effects

Obesity has become a close second to tobacco as a leading cause of preventable death. It is associated with a plethora of health problems including: type 2 diabetes, metabolic syndrome, Blount disease, dyslipidemia, hypertension, non-alcoholic fatty liver disease, atherosclerosis, depression, poor quality of life, pseudotumor cerebri, obstructive sleep apnea, asthma, proteinuria, renal disease, as well as breast, uterus, ovary, stomach and prostate cancers (Daniels, 2004).

Although many of these are considered adult diseases, their origin is in childhood. Obese children who are six years or older have a 70% to 80% chance of continuing their obesity into adulthood (Moran, 1999).

Overweight and obesity also have several psychosocial problems associated with them. Childhood onset obesity carries with it a greater chance of psychopathology in adulthood (Mills, 1993). These problems can include body image disturbance, self-consciousness, passivity, low self-esteem, low assertiveness, and depression. These problems can become more severe with further weight gain (Gordon, 2005).

Caucasian girls were found to be three times as likely to describe themselves in negative terms, than
African-American girls. These same adolescents also reported low self-esteem, school-related difficulties, problems interacting with peers, fatigue and health concerns (Neumark-Sztainer, 1999).

Felt (1992) found that many adolescent perceive themselves as fat, whether they are or not. Out of 63% of adolescent girls reporting themselves as fat, only 40% actually were. Of those trying to lose weight, 41% reported using unsafe methods such as diet pills or fasting. Other studies have found laxative use to be at 5% of adolescents and vomiting at 11% (Kilpatrick, 1999).

Strategies for Weight-Loss

Popular weight loss strategies include diet pills, fasting, using laxatives, vomiting, and gastric bypass. The majority of these strategies are unhealthful and ineffective (Kilpatrick, 1999). The Institute of Medicine’s recently released Childhood Obesity Prevention Study (IOM, 2005) suggests a multi-level approach including Federal, State, and local governmental involvement in addition to media, health care professionals, schools communities and families. The study, however, places a clear emphasis on the individual’s responsibility, citing an energy imbalance,
as the overall cause of obesity. If inactivity and overeating are the primary causes for weight gain, it follows naturally that exercise and dieting are the best strategies for weight loss (Moran, 1999; Kilpatrick, 1999; Shaughnessy, 2005). Studies have shown that even modest increases in exercise can result in weight loss (NIH, 2005; Pangrazi, 2003; Dao, 2004).

Gutin (1999) found that physical training five days per week for five months without dietary changes resulted in a favorable impact on body composition in obese children. The most successful programs, however, include dietary changes, exercise programs, and some form of behavior therapy. The American Obesity Association recommends programs that include these elements and emphasizes that exercise should be age/developmentally appropriate, as well as enjoyable (AOA, 2005). Paxton (2004) found that Physical Education classes can increase prevalence rates of moderate to vigorous physical activities among adolescents. Their recommendations are that school interventions should include physical activity, reductions in high-fat diets, and behavior modification techniques to improve compliance and promote lifestyle changes. The Academy of the Sierras has a successful program that includes cooking, exercise,
cognitive-behavioral therapy, and a family component in a school setting. Despite prohibitive cost, and possible self-selection threats to the validity of their studies, their comprehensive approach has worked (Borja, 2005). Miller (2004), in a study addressing changing activity levels in adolescent girls, found that school-based programs should include the elements mentioned above with the addition of the goal of improving self-efficacy levels with regard to exercise. Indeed, the goal of most behavioral therapy in weight-loss programs centers around diet and exercise self-efficacy. Exercise programs that are developmentally appropriate and enjoyable have been shown to be successful as a weight-loss strategy for children and adolescents (Strong, 2005). Children themselves recommend fun enjoyable exercise activities as a necessary component of a program that they would adhere to for an extended period of time.

Predictors of Exercise in Adolescents

The majority of published studies on predictors of exercise in adolescents have been focused on two of three concepts within social cognitive theory, those of personal factors and behavior (Reynolds, 1990; Robbins, 2004; Dwyer, 1998; McAuley, 1992; Miller, 2002; Dishman, 2004).
Reynolds (1990) found that psychosocial variables such as intention to exercise, exercise self-efficacy, stress and direct social influence were all significantly related to physical activity.

Several researchers have studied the relationship between exercise self-efficacy, a personal factor, and physical activity, a behavioral factor (Robbins, 2004; Dwyer, 1998; McAuley, 1992; Miller, 2002; Dishman, 2004). However, some of these studies are stronger than others in terms of their ability to be generalized. For example, Miller (2002) admits to a homogenous sample, and the use of self-report measures for activity levels. Both of these limitations are reasons for caution with regard to generalizing the results of this study. The most interesting finding in this study was that activity level was predictive of exercise self-efficacy. Whereas, other studies have found exercise self-efficacy to be a predictor of exercise, this study confirms the reciprocal determinism concept in Bandura’s (1977) self-efficacy theory. That is, that self-efficacy increases as the activity increases, which, in turn increases self-efficacy.

Robbins (2004) findings contribute to the evidence supporting SCT (Bandura, 1977) and its concept of
self-efficacy. The results indicated that higher self-efficacy predicted lower perceived exertion levels, and that lower perceived exertion levels contribute to higher self-efficacy. These findings are consistent with McAuley (1992). In this case, two personal factors were found to have a reciprocal relationship. Lower perceived exertion levels allowed the adolescents ability to enjoy exercise. These results prompted the authors to emphasize the importance of successful performance in building self-efficacy. They recommend that programs be individually tailored and compatible with the fitness level of the child. This study has a nearly ideal design for generalizing results. The only limitation in McAuley’s study (1992) is that the sample was not random, but rather, a self-selected sample.

Dishman (2005) found that self-management strategies, such as, setting physical activity goals, and making back-up plans, mediate the association of self-efficacy and physical activity, independent of perceived barriers, outcome expectancy value, and enjoyment in adolescent girls. This study also focused only on behavioral factors and personal factors.

In one of the few studies measuring environmental factors, Motl (2005) found that self-efficacy mediated the
effects of perceived equipment accessibility on physical activity in adolescent girls. This finding added to earlier research on self-efficacy and internal/external barriers to physical activity (Dwyer, 1998). Motl (2005) also found, contrary to expectations, that neighborhood safety did not exhibit an effect on physical activity in the same population. The authors note, however, that this finding may be due to high degree of neighborhood safety reported in the study. They suggest that future research should examine the effect of lower levels of perceived safety on physical activity. The authors also recommend the use of more objective environmental measures, such as geographic information systems to map congested roadways and parks.

Trost (2003) evaluated a model of parental influence on youth physical activity. This study was designed "to test a conceptual model linking parental physical activity, parental support for physical activity, and children's self-efficacy perceptions with physical activity participation" (Trost, 2003). Their findings suggest that parental support is related to child physical activity, both directly and indirectly through its association with self-efficacy. A surprising finding was that "parental physical activity did not directly
influence child physical activity." Thus, supportive parents, regardless of their own physical activity levels, positively influence their children's physical activity. The authors note that the limitations of their study include a "mostly white" sample with "an unusually large number of highly educated parents." They also note the possibility that peer support may be a significant predictor of physical activity among adolescents.

In the process of this review, a noticeable gap in the research became evident with regard to the effects of attitude on physical activity. Matthys et al. (1998) posited that attitude may be the primary determinant of physical activity, and that mandatory physical activity may improve attitude toward exercise. The results of the study failed to show any improvement in attitude. The authors cite the temporal proximity of the questionnaire to the health class, and the effectiveness of the instructors, as possible reasons for the results. This study demonstrates the need for further research into the possible relationship between attitude and physical activity.
CHAPTER THREE
DESIGN AND METHODOLOGY

Participants

A convenience sample from the general population at Beaumont High School was recruited. The participants and their parents were briefed on the study, given the surveys and instructions. The ages of the students range from 14 to 18. The sample consisted of 42 males and 65 females. The percentages of ethnic groups in the sample were: Asian/Pacific Islander = 4.7%, African American = 5.6%, Latino/Hispanic = 32.7%, White = 39.3%, Multi-racial = 13.1%, and Other = 4.7% (See Table 1).

Beaumont High school was chosen for its population, which is different from that of previous studies (Trost, 2004; Dishman, 2005; Motl, 2001). The above mentioned studies have focused on African-American and Caucasian adolescent girls and students whose parents had unusually high levels of education.

Instrumentation/Data Collection

Three separate measures were combined to form the 30-item student instrument used in this study. The parent survey included only the seven items used to measure student attitude. The student and parent surveys are
located in Appendix A. The Youth Risk Behavior Surveillance System (YRBSS, 2004) item on physical activity levels was used: On how many of the last seven days did you exercise or participate in physical activity for at least 20 minutes that made you sweat and breathe hard? This item is rated on a 8 point scale, ranging from 0 to 7 days. This item has been found to have validity and reliability with regard to measuring adolescent physical activity levels (YRBSS, 2004). The YRBSS is conducted every two years in random high schools across the US. It is used by the Centers for Disease Control and Prevention for assessment and planning of prevention programs for physical activity, and weight control, as well as alcohol, tobacco, and other drugs.

The second instrument utilized was the Exercise Self-Efficacy Scale of Sallis (1988). This measure has twelve items that are rated on a 6 point scale, ranging from "I know I cannot" (1), to "I know I can" (5), and "Does not apply" (8).

Thirdly, the Revised Attitude Toward Physical Activity (Schutz, 1985) was used to measure student and parent attitude towards physical activity. This measure has seven items assessing attitude toward physical activity using a five point rating scale (good = 5, to
bad = 1, etc). It has consistently demonstrated an internal consistency reliability of .80 to .90; and a retest reliability of .60 (Schutz, 1985). Construct validity of the measure has been found in several studies (Schutz, 1985).

All surveys, forms and procedures were approved by the Institutional Review Board of California State University San Bernardino. The letter of approval and stamped copies of consent forms may be found in Appendix A. Since this study involves adolescents, parental consent was required. This was achieved through the use of the above mentioned consent form. In an effort to protect the identity of all subjects, this form, as well as all other forms and surveys, were anonymous. The parental consent form explained the study's goals, procedures, risks and benefits. Only students who returned the consent forms were allowed to complete the survey.

The distribution of 327 informed consent forms resulted in the return of 163 checked forms. 142 student surveys were completed. 121 parent surveys were returned, 14 of which were incomplete, resulting in N = 107. Time constraints prevented the acquisition of a larger sample size.
Data Treatment Procedures

For question #1. Do parental attitudes toward exercise affect physical activity in adolescents? These data were analyzed using a simple linear regression. This test was chosen for ability to predict one variable from another.

Question #2. Do parental attitudes predict exercise self-efficacy in adolescents was analyzed using an hierarchical linear regression, holding gender and ethnicity as co-variates.

Question #3. Do student attitudes toward exercise differ from parent attitudes? These data were analyzed using an independent t-test.

Question #4. Are there gender differences in the effect of parental attitudes on exercise in adolescents? These data were analyzed using an hierarchical linear regression.
CHAPTER FOUR

FINDINGS

Findings

#1. Do Parental Attitudes toward Exercise Affect Physical Activity in Adolescents?

A correlation matrix and a simple linear regression were calculated to test the hypothesis that adolescents' physical activity level can be predicted by their respective parents' attitudes toward exercise. The revised ATPA was used to measure parent attitudes toward exercise. Adolescent physical activity was measured using the YRBSS item: On how many of the last seven days did you exercise or participate in physical activity for at least 20 minutes that made you sweat and breathe hard. This item is rated on an 8-point scale, ranging from 0 to 7 days. To determine if the assumptions for simple linear regression were met, histograms of participants' scores for parent attitude and for adolescent physical activity were computed (Figure 1 & 2). The current results indicate that there is a weak non-significant correlation between parental attitude and students' physical activity level ($r(105) = .013, p = .172$). The regression equation was not significant ($F(1,105) = 1.892, p = .172$) with an $R^2$ of .018 (See Table 2). These results indicate that parent
attitude toward physical activity does not predict physical activity in adolescents.

#2. Do Parental Attitudes Predict Exercise Self-Efficacy in Adolescents?

A correlation matrix and a hierarchical multiple regression were calculated to determine the relationship between parental attitudes toward physical activity and exercise self-efficacy in adolescents, above and beyond gender and ethnicity. The assumptions for multiple regression were met (See Figure 3). Gender and ethnicity were dummy coded (Gender as: 0 = female, 1 = male, and Ethnicity as: 0 = non-minority, 1 = minority) to determine their relationship with self-efficacy. The results indicate that parent attitude toward physical activity is positively correlated with exercise self-efficacy in adolescents in this sample, controlling for gender and ethnicity (F(7, 98) = 2.630, p = .016), with an R² of .158, β = .182, p = .059 (See Table 3).

#3. Do Student Attitudes toward Exercise Differ from Parent Attitudes?

An independent-samples T-test was calculated comparing the mean score of student attitudes to the mean score of parent attitudes. No significant difference was found (t(.017) = .986, p = .440). The mean of the students’ attitudes score (m = 168.29, sd = 18.26) did not
significantly differ from the mean of their parents’ attitude score \( m = 168.24, \ sd = 19.60 \). This result indicates that student attitudes toward exercise do not differ significantly from their parent’s attitudes toward exercise in the current sample (See figure 4).

#4. Are there Gender Differences in the Effect of Parental Attitudes on Physical Activity in Adolescents?

A correlation matrix and a hierarchical multiple regression were utilized to test the hypothesis involving possible gender differences in the effect of parental attitudes on physical activity in adolescents. The current results indicate that there is a weak correlation, that is not significant, between gender and parental attitude \( r(105) = .128, \ p = .179 \), and that there is a significant correlation between gender and physical activity, namely that males are more likely to exercise than females \( r(105) = -.229, \ p = .017 \). The results of the regression indicate that gender does not have a mediating relationship between parent attitude and exercise in adolescents in this sample \( F(3,103) = 2.846, \ p = .041 \), with an \( R^2 \) of .077 (See Table 4).
Discussion

The results for question one (Do parental attitudes toward exercise affect physical activity in adolescents?) indicate that parent attitude toward physical activity does not predict physical activity in adolescents. This finding is consistent with Matthys (1998), who found that parental attitude was not a significant predictor exercise in adolescents. This finding is also consistent with Trost (2003), in that parental physical activity orientations do not have a direct effect on children’s physical activity behaviors. However, due to several problems with the revised ATPA, including a ceiling effect (Schutz, 1985), the possibility of a predictive element cannot be entirely ruled out. Other limitations to consider when viewing this result include the limitations of the study design, the inaccuracy of the attitude measure, and the overall recall and social desirability biases involved in self-report measures. These may all have been threats to internal validity. The findings, however, may have implications for the design of future measures for attitude toward physical activity, as they emphasize the need for improved instruments.

The results for question two (Do parental attitudes predict exercise self-efficacy in adolescents?) suggest
that parent attitude is predictive of student exercise self-efficacy. Given the well-documented relationship between self-efficacy and physical activity (Reynolds, 1990; Robbins, 2004; Dwyer, 1998; McAuley, 1992; Miller, 2002; Dishman, 2004), this result offers questions as to the findings from question one. If self-efficacy has been demonstrated to be predictive of exercise in several previous studies, and parental attitude has been found to be predictive of self-efficacy in this study, it would seem logical that parental attitude would be correlated to physical activity. Perhaps this finding further illustrates the profound mediating effect of self-efficacy.

The findings from question three (Do student attitudes toward exercise differ from parent attitudes?) indicate that there is no difference between adolescent attitudes toward physical activity and those of parents. This result may have implications for program development, in that programs designed to improve parental attitude may also improve student attitude toward exercise. Additionally, if self-efficacy and attitude have a reciprocal relationship, and increased self-efficacy has a positive relationship on physical activity (Reynolds, 1990; Robbins, 2004; Dwyer, 1998; McAuley, 1992; Miller,
2002; Dishman, 2004), then programs designed to increase exercise self-efficacy in both students and parents may be effective in increasing physical activity in both parents and students.

The findings from question four (Are there gender differences in the effect of parental attitudes on physical activity in adolescents?) indicate that there is not a significant gender difference in the effect of parent attitude on adolescent physical activity in this sample. Given that question one found no relationship between the two, this is not surprising. The current results do show a significant relationship between physical activity and gender. This suggests that adolescent males are more physically active than adolescent females. This is consistent with previous research (Sallis, 1996). The results also reiterate the importance of self-efficacy as a mediator for physical activity, as, when it was include in the regression, the results revealed a change.
CHAPTER FIVE
CONCLUSIONS AND RECOMMENDATIONS

Conclusion

The physically and psychologically damaging effects of obesity are well documented. As the prevalence of childhood and adolescent obesity continues to rise, health educators must continue research to discern the correlates and predictors of this trend. The literature clearly demonstrates the need for physical activity in any program designed to reduce or prevent obesity. Many obese children and adolescents are physically inactive, despite widespread knowledge of the benefits of exercise. Previous studies have found various predictors for the activity level of adolescents, including parental support and self-efficacy. However, the literature demonstrates a clear need for more research in the area of parental influence, including attitudes, on adolescent physical activity.

This study's findings were unable to demonstrate a definitive relationship between parent attitude and physical activity. However, the results have supported previous studies' findings on the mediating relationship between self-efficacy and physical activity. Considering
the strength of self-efficacy, and the current result of a relationship between parent attitude and self-efficacy, further research in this area seems necessary to fully understand the influences of adolescent physical activity.

Recommendations for Future Research

The results of this study illustrate the necessity for improved measures and study designs to further understanding of the correlates of physical activity in adolescents. The research implications of this study's results include the development of more accurate measures for attitude toward physical activity. The instrument used in this study, the revised ATPA, has an extreme ceiling effect in the sub-domain of health and fitness (Question # 3, parent survey). The instrument has not been shown to have predictive validity, and as a self-report measure, contains recall and social-desirability biases (Schutz, 1985). Future research into more effective measurements of attitude toward exercise may consider modifications to the psychometric properties of the measure to reduce the ceiling effect and biases. In addition, a random sample is recommended for replications of this type of study, to increase the ability to generalize results. Other improvements to the study design may include a mailing or
personal delivery of the parent attitude survey to insure completion by the parent. The use of a longitudinal study design with a larger sample may result in stronger correlations between parent attitude and adolescent exercise.

The current findings also have practical implications for the development of obesity prevention, healthy weight maintenance, and exercise programs. While the results do not support the inclusion of a parent attitude component in programs, health professionals may consider reviewing the most recent studies in this area, as improved instruments and designs may reveal significant results. Program developers and physical education professionals must consider including a component designed to increase exercise self-efficacy (Sallis, 1988), both in parents and students. This may increase the effectiveness of a program. This component should focus on developmentally appropriate exercise that is enjoyable, for both parents and students. Through the increase of self-efficacy, there may be improvements in attitude, as well as in physical activity.

In conclusion, as the prevalence of adolescent obesity continues to rise, health professionals must make every effort to understand the epidemic. Through continued
research into the predictors of exercise in adolescents, educators, program developers, policy makers, communities and families can begin to reverse the trend of childhood and adolescent obesity.
APPENDIX A

SURVEYS, CONSENT FORM, DIRECTIONS
PHYSICAL ACTIVITY SURVEY # ________

STUDENT

You have the right to withdraw from participation in this study at any time.

1. Gender  0. Male  1. Female
2. Age  ______
3. Height  _____ feet  _____ inches
4. Weight  _____ pounds
5. How do you identify your ethnic background (circle one number only)
   1. Asian/Pacific Islander
   2. Black/African American
   3. Native American Indian
   4. Latino/Hispanic
   5. White
   6. Multi-racial/Multi-ethnic
   7. Other (please specify)

The next 7 questions are about physical activity.
Circle the letter that best describes your activity level.

6. On how many of the last 7 days did you exercise or participate in physical activity for at least 20 minutes that made you sweat and breathe hard, such as basketball, soccer, running, swimming laps, fast bicycling, fast dancing or similar aerobic activities?
   a. 0 days
   b. 1 day
   c. 2 days
   d. 3 days
   e. 4 days
   f. 5 days
   g. 6 days
   h. 7 days

7. On how many of the past seven days did you participate in physical activity for at least 30 minutes that did not make you sweat or breathe hard, such as fast walking, slow bicycling, skating, pushing a lawnmower, or mopping floors?
   a. 0 days
   b. 1 day
   c. 2 days
   d. 3 days
   e. 4 days
   f. 5 days
   g. 6 days
   h. 7 days
8. During the past 7 days, on how many days were you physically active for a total of at least 60 minutes per day? (Add up all the time you spend in any kind of physical activity that increases your heart rate and makes you breathe hard some of the time)
   a. 0 days
   b. 1 day
   c. 2 days
   d. 3 days
   e. 4 days
   f. 5 days
   g. 6 days
   h. 7 days

9. In an average week when you are in school, on how many days do you go to physical education (PE) classes?
   a. 0 days
   b. 1 day
   c. 2 days
   d. 3 days
   e. 4 days
   f. 5 days

10. During an average PE class, how many minutes do you spend actually exercising or playing sports?
    a. I do not take PE
    b. Less than 10 minutes
    c. 10 to 20 minutes
    d. 21-30 minutes
    e. 31-40 minutes
    f. 41-50 minutes

11. During the past 12 months, on how many sports teams did you play? (Include any teams run by your school or community groups)
    a. 0 teams
    b. 1 team
    c. 2 teams
    d. 3 or more teams
Whether you exercise or not, please rate how confident you are that you could really motivate yourself to do things like these consistently, for at least 6 months.

Please circle one number for each question.

<table>
<thead>
<tr>
<th>Question</th>
<th>I know I Cannot</th>
<th>Maybe I can</th>
<th>I know I can</th>
<th>Does not apply</th>
</tr>
</thead>
<tbody>
<tr>
<td>12. Get up early, even on weekends, to exercise.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>13. Stick to your exercise program after a long tiring day at school.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>14. Exercise even though you are feeling depressed.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>15. Set aside time for a physical activity program; that is, walking,</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>jogging, swimming, biking, or other continuous activities for at</td>
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<tr>
<td>least 30 minutes, 3 times per week.</td>
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<tr>
<td>16. Continue to exercise with others though they seem too fast or too</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>slow for you.</td>
<td></td>
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<tr>
<td>17. Stick to your exercise program when undergoing a stressful life</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>change (eg. Divorce, death in the family, moving).</td>
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<tr>
<td>18. Attend a party only after exercising.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>19. Stick to your exercise program when your family is demanding more</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>time from you.</td>
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<tr>
<td>20. Stick to your exercise program when you have household chores to</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>attend to.</td>
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<tr>
<td>21. Stick to your exercise program even when you have excessive demands</td>
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<td>3</td>
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<tr>
<td>at work.</td>
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<tr>
<td>22. Stick to your exercise program when social obligations are very</td>
<td>2</td>
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<td>5</td>
</tr>
<tr>
<td>time consuming.</td>
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<tr>
<td>23. Read or study less in order to exercise more.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
Place a checkmark on one of the lines provided between each of the words that best describes how you feel about each idea.

24
How do you feel about the idea in the box?

<table>
<thead>
<tr>
<th>Taking part in physical activities which give you a chance to meet new people.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Always think about the idea in the box.</td>
</tr>
<tr>
<td>If you do not understand this idea, mark this box [ ]</td>
</tr>
<tr>
<td>And go to the next question.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Good</th>
<th>Of no use</th>
<th>Not pleasant</th>
<th>Nice</th>
<th>Happy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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</tbody>
</table>

25
How do you feel about the idea in the box?

<table>
<thead>
<tr>
<th>Taking part in physical activities which give you a chance to be with your friends.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Always think about the idea in the box.</td>
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<tr>
<td>If you do not understand this idea, mark this box [ ]</td>
</tr>
<tr>
<td>And go to the next question.</td>
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</table>

<table>
<thead>
<tr>
<th></th>
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<th>Of no use</th>
<th>Not pleasant</th>
<th>Nice</th>
<th>Happy</th>
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<td>1</td>
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</tbody>
</table>
26

How do you feel about the idea in the box?

Taking part in physical activities to make your health better and get your body in better condition.

Always think about the idea in the box.
If you do not understand this idea, mark this box [ ]
And go to the next question.

<table>
<thead>
<tr>
<th></th>
<th>Good</th>
<th></th>
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<th></th>
<th>Bad</th>
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<tbody>
<tr>
<td>2</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Useful</td>
<td></td>
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<tr>
<td>3</td>
<td>Harmful</td>
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<td>Beneficial</td>
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<td>4</td>
<td>Wise</td>
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<td></td>
<td>Foolish</td>
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<td>5</td>
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<td></td>
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<td>Unhealthy</td>
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<td>6</td>
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<tr>
<td>7</td>
<td>Boring</td>
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<td></td>
<td></td>
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<td>Exciting</td>
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<tr>
<td>8</td>
<td>Not pleasant</td>
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<td>Pleasant</td>
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<td>9</td>
<td>Nice</td>
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<td>Awful</td>
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<td>10</td>
<td>happy</td>
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<td></td>
<td>sad</td>
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</tbody>
</table>

27

How do you feel about the idea in the box?

Taking part in physical activities that could be dangerous because you move very fast and must change direction quickly.

Always think about the idea in the box.
If you do not understand this idea, mark this box [ ]
And go to the next question.

<table>
<thead>
<tr>
<th></th>
<th>Good</th>
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<tbody>
<tr>
<td>2</td>
<td>Of no use</td>
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<td></td>
<td></td>
<td></td>
<td>Useful</td>
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<td>3</td>
<td>Not unpleasant</td>
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<td>Pleasant</td>
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<td>4</td>
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<td>Awful</td>
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<td>sad</td>
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</tr>
</tbody>
</table>
28
How do you feel about the idea in the box?

Taking part in physical activities which have beautiful and graceful movements.

Always think about the idea in the box.
If you do not understand this idea, mark this box [ ]
And go to the next question.

<p>| | | | | | | |</p>
<table>
<thead>
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<td>1</td>
<td>Good</td>
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<td>4</td>
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<td>5</td>
<td>happy</td>
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</tr>
</tbody>
</table>

29
How do you feel about the idea in the box?

Taking part in physical activities to reduce stress or to get away from problems you might have

Always think about the idea in the box.
If you do not understand this idea, mark this box [ ]
And go to the next question.

<p>| | | | | | | |</p>
<table>
<thead>
<tr>
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<tbody>
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<td>1</td>
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<td>Of no use</td>
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<td>3</td>
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<td>5</td>
<td>happy</td>
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</tr>
</tbody>
</table>
30
How do you feel about the idea in the box?

Taking part in physical activities that have long and hard practices. To spend time in practice you need to give up other things you like to do.

Always think about the idea in the box.
If you do not understand this idea, mark this box [ ]
And go to the next question.

1 Good ______:_____:_____:_____:_____
2 Of no use ______:_____:_____:_____:_____
3 Not pleasant ______:_____:_____:_____:_____
4 nice ______:_____:_____:_____:_____
5 happy ______:_____:_____:_____:_____

Bad
Useful
Pleasant
Awful
sad

Thank you for your time in filling out this survey
PHYSICAL ACTIVITY SURVEY  #________

PARENT/GUARDIAN

You have the right to withdraw from participation in this study at any time.

Place a checkmark on one of the lines provided between each of the words that best describes how you feel about each idea.

1. How do you feel about the idea in the box?

| Taking part in physical activities which give you a chance to meet new people. |
|---|---|---|---|---|
| Always think about the idea in the box. |
| If you do not understand this idea, mark this box [ ] |
| And go to the next question. |
| 1 Good |  |  |  |  | Bad |
| 2 Of no use |  |  |  |  | Useful |
| 3 Not pleasant |  |  |  |  | Pleasant |
| 4 Nice |  |  |  |  | Awful |
| 5 happy |  |  |  |  | sad |

2. How do you feel about the idea in the box?

| Taking part in physical activities which give you a chance to be with your friends. |
|---|---|---|---|---|
| Always think about the idea in the box. |
| If you do not understand this idea, mark this box [ ] |
| And go to the next question. |
| 1 Good |  |  |  |  | Bad |
| 2 Of no use |  |  |  |  | Useful |
| 3 Not pleasant |  |  |  |  | Pleasant |
| 4 Nice |  |  |  |  | Awful |
| 5 happy |  |  |  |  | sad |
3.

How do you feel about the idea in the box?

Taking part in physical activities to make your health better and get your body in better condition.

Always think about the idea in the box.
If you do not understand this idea, mark this box [ ]
And go to the next question.

1. Good
2. Of no use
3. Harmful
4. Wise
5. Healthy
6. Punishing
7. Boring
8. Not pleasant
9. Nice
10. Happy

Bad
Useful
Beneficial
Foolish
Unhealthy
Rewarding
Exciting
Pleasant
Awful
sad

4.

How do you feel about the idea in the box?

Taking part in physical activities that could be dangerous because you move very fast and must change direction quickly.

Always think about the idea in the box.
If you do not understand this idea, mark this box [ ]
And go to the next question.

1. Good
2. Of no use
3. Not pleasant
4. Nice
5. happy

Bad
Useful
Pleasant
Awful
sad
5.

How do you feel about the idea in the box?

Taking part in physical activities which have beautiful and graceful movements.

Always think about the idea in the box.
If you do not understand this idea, mark this box [ ]
And go to the next question.

1 Good
2 Of no use
3 Not pleasant
4 nice
5 happy

6.

How do you feel about the idea in the box?

Taking part in physical activities to reduce stress or to get away from problems you might have

Always think about the idea in the box.
If you do not understand this idea, mark this box [ ]
And go to the next question.

1 Good
2 Of no use
3 Not pleasant
4 nice
5 happy
7.

How do you feel about the idea in the box?

<table>
<thead>
<tr>
<th>Taking part in physical activities that have long and hard practices. To spend time in practice you need to give up other things you like to do.</th>
</tr>
</thead>
</table>

Always think about the idea in the box.
If you do not understand this idea, mark this box [ ]
And go to the next question.

<table>
<thead>
<tr>
<th>1</th>
<th>Good</th>
<th></th>
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<th></th>
<th></th>
<th></th>
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<td>sad</td>
</tr>
</tbody>
</table>
INFORMED CONSENT

PARENT/GUARDIAN

The study in which you are being asked to participate is designed to investigate the relationship between parental attitudes toward physical activity and physical activity attitudes and behaviors of adolescents. It is being conducted by John Fieldhouse under the supervision of Dr. Kim Clark, Department of Health Science and Human Ecology. This study has been approved by the Institutional Review Board, California State University, San Bernardino.

In this study you and your student will be asked to answer questions about your attitudes about physical activity as well as your physical activity levels. The survey should take about 10 to 15 minutes to complete. All of your responses will be held in strict confidence by the researchers. Your name will not be reported with your responses. All data will be reported in group form only. You may receive the group results of this study upon completion at June 1, 2006 by emailing jfieldhouse@beaumontusd.k12.ca.us

Your participation in this study is totally voluntary. You are free to not answer any questions and withdraw at any time during this study without penalty. When you have completed the study you will receive a debriefing statement describing the study in more detail. In order to insure the validity of the study, we ask that you not discuss this study with other students. There are no risks involved in this study. The benefits of this study include knowledge of attitudes and feelings toward exercise in your family. If you have any questions or concerns about this study, please feel free to contact Dr. Clark at (909) 537-5000, extension 75323.

By placing a checkmark on the line below, I acknowledge that I have been informed of, and that I understand, the nature and purpose of this study, and I freely consent to allow my student to participate. I also acknowledge that I am at least 18 years of age.

Place checkmark here __

Student ID # ________________

Signature of Parent/Guardian_________________ Date____

42
PROCESS FOR STUDY
STEP 1: DISTRIBUT CONSENT FORMS TO ALL STUDENTS
STEP 2: COLLECT CONSENT FORMS
STEP 3: DISTRIBUTE ENVELOPES OF MATCHED PARENT SURVEYS AND STUDENT SURVEYS ONLY TO STUDENTS WHO HAVE TURNED IN CONSENT FORMS
STEP 4: COLLECT STUDENT SURVEYS
STEP 5: COLLECT ENVELOPES WITH COMPLETED PARENT SURVEYS

DIRECTIONS FOR STEP 1:
Please read the following instructions to students before passing out surveys:
“Mr. Fieldhouse is requesting your participation in a survey designed to compare parent and student attitudes about physical activity. In order to do the survey, we need parental consent. Each of you has received a consent form for your parent/guardian to complete. Please return the consent form to me over the next two days.”

DIRECTIONS FOR STEP 2:
Collect consent forms and keep record of names.

DIRECTIONS FOR STEP 3:
NOTE: only students who have turned in consent forms can take surveys
Please read the following statement to students before passing out envelopes with parent surveys and student surveys:
“You will each be given a packet that contains a parent/guardian survey, a student survey, and an assent form. This survey is designed to find out attitudes about physical activity. Both you and your parent/guardian will complete surveys that are matched by number. It is very important to return the parent survey sealed in the envelope provided, because without it the student survey cannot be used. Completing this survey is voluntary and you may stop any time you wish without penalty. Please do not write your name anywhere on the survey. This is not a test, so there are no right or wrong answers. Please answer all of the questions honestly. You may begin now.”
APPENDIX B

TABLES AND FIGURES
TABLES

Table 1. Sample Demographics

N = 107

<table>
<thead>
<tr>
<th>Age</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
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<td>15</td>
<td>39</td>
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<td>50</td>
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GENDER

<p>| | | |</p>
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</thead>
<tbody>
<tr>
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<td>42</td>
<td>39.3</td>
</tr>
<tr>
<td>Female</td>
<td>65</td>
<td>60.7</td>
</tr>
</tbody>
</table>

ETHNICITY

<table>
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<th>Ethnicity</th>
<th>N</th>
<th>%</th>
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</thead>
<tbody>
<tr>
<td>African American</td>
<td>6</td>
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</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>5</td>
<td>4.7</td>
</tr>
<tr>
<td>Latino/Hispanic</td>
<td>35</td>
<td>32.7</td>
</tr>
<tr>
<td>Other</td>
<td>19</td>
<td>17.8</td>
</tr>
<tr>
<td>White</td>
<td>42</td>
<td>39.3</td>
</tr>
</tbody>
</table>

Table 2. Parent Attitude and Physical Activity Regression Summary

<table>
<thead>
<tr>
<th>PREDICTOR</th>
<th>r</th>
<th>R²</th>
<th>Final B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent Attitude</td>
<td>.133</td>
<td>.018</td>
<td>.013*</td>
</tr>
</tbody>
</table>

Statistically significant

Table 3. Parent Attitude and Self-efficacy Regression Summary

<table>
<thead>
<tr>
<th>PREDICTOR</th>
<th>r</th>
<th>R²</th>
<th>Final B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent Attitude</td>
<td>.176</td>
<td>.022</td>
<td>.176</td>
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<tr>
<td>Self-efficacy</td>
<td>.299</td>
<td>.063</td>
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</tr>
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</table>

* None were statistically significant
Table 4. Gender and Parent Attitude Regression Summary

<table>
<thead>
<tr>
<th>PREDICTOR</th>
<th>$r$</th>
<th>$R^2$</th>
<th>Final $B$</th>
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</thead>
<tbody>
<tr>
<td>Gender</td>
<td>.277</td>
<td>.050</td>
<td>-.229</td>
</tr>
</tbody>
</table>

* None were statistically significant

FIGURES

Figure 1 Histogram of PA Scores

Figure 2 Histogram of Parent Attitude Scores
FIGURES

Figure 3 Histogram of self-efficacy scores

Figure 4 Parent and Student Attitude Bar Chart
REFERENCES


Reynolds, Kim, PhD, et al. (1990) Psychosocial predictors of physical activity in adolescents, Preventive Medicine, 19(5), 541-551.


Schutz, Robert, W., Inventories and Norms for Children’s Attitudes toward Physical Activity. (1985) Research Quarterly for Exercise and Sport, 56(3), 256-265.

