THE INFLUENCE OF PERCEIVED SUPPORT FROM PARENTAL AND PEER RELATIONSHIPS ON STUDENTS' HEALTH-RELATED BELIEFS AND BEHAVIORS

Mitch Barton, B.S.

Thesis Prepared for the Degree of

MASTER OF SCIENCE

UNIVERSITY OF NORTH TEXAS

May 2013

APPROVED:

Scott Martin, Major Professor
Tao Zhang, Committee Member
Allen Jackson, Committee Member and Chair of the Department of Kinesiology, Health Promotion, and Recreation
Jerry R. Thomas, Dean of the College of Education
Mark Wardell, Dean of the Toulouse Graduate School

Barton, Mitch. The influence of perceived support from parental and peer relationships on students' health-related beliefs and behaviors. Master of Science (Kinesiology), May 2013, 45 pp., 5 tables, references, 63 titles.

College is an important time for young adults, but most college students fail to meet the daily recommendations for physical activity. Social support is associated with positive health practices, but limited research is available on the role of perceived support from specific relationships, (e.g., peers and parents). The purpose of this study was to evaluate the effect of perceived support from parental and peer relationships on health-related beliefs and behaviors. Participants ($N = 333$) completed the Quality of Relationships Inventory, Multidimensional Scale of Perceived Social Support, Satisfaction With Life scale, and a short version of the Physical Self-Description Questionnaire. While highly active students did not necessarily have more socially support relationships, females self-reported more conflict with both parents and more depth and support with a special person in their life than males, and parental and peer relationships appeared to be a greater influence on females' perceptions of satisfaction and self-worth.

ACKNOWLEDGMENTS

I am indebted to several individuals for their help with this project. First and foremost, I would to thank my major professor, Dr. Scott Martin, for all of his assistance and guidance over the past year and his commitment to my success. His insight was an invaluable resource at every step of this process. I would also like to thank my committee members, Dr. Allen Jackson and Dr. Tao Zhang, for their time and suggestions with this project. In addition, I would like to thank Matt Peters and Ellie Chen for the hours that they dedicated to helping with data collection. Without their assistance, I would not have been able to overcome many of the barriers that we faced. Lastly, I would like to thank my wonderful wife for all of her support and patience with me from the beginning until the very end of this project. Her encouragement was a constant motivator even during the most challenging times.

TABLE OF CONTENTS

Page

LIST OF TABLES

Page

THE INFLUENCE OF PERCEIVED SUPPORT FROM PARENTAL AND PEER RELATIONSHIPS ON STUDENTS' HEALTH-RELATED BELIEFS AND BEHAVIORS

Introduction

Promoting regular physical activity (PA; i.e., any bodily movement produced by skeletal muscles that results in energy expenditure) is intended to encourage the development of a healthy, active lifestyle as an adult (McGuire, Hannan, Neumark-Sztainer, Cossrow, & Story, 2002; Thompson, Humbert, & Mirwald, 2003). Unfortunately, recent estimates indicate that over one-third of adults and almost 17% of children and adolescents in the United States are obese (Ogden, Carroll, Kit, & Flegal, 2012). This indicates that a majority of obese adults were not considered obese as children (Ogden et al., 2012; Serdula et al., 1993), and declining PA levels leading into and during young adulthood (i.e., 18-29 year-olds) has been a major factor for weight gain later in life (Caspersen, Pereira, & Curran, 2000; Robbins, Stommel, & Hamel, 2008). Young adulthood is often characterized by change, exploration, and the adoption of lifestyle behaviors (Arnett, 2000), and college is an important time for young adults because they are unlikely to remain physically active if they enter the workforce as sedentary individuals (Wallace, Buckworth, Kirby, & Sherman, 2000). Unfortunately, most college students fail to meet the American College of Sports Medicine's guidelines for PA (Dinger & Waigandt, 1997), and social factors (e.g., lack of support) have been implicated as major reasons for the decline in PA during college (Calfas, Sallis, Lovato, & Campbell, 1994; Nelson, Kocos, Lytle, & Perry, 2009).

In fact, social support (i.e., behaviors that help an individual reach desired goals or outcomes) is a widely studied concept that has been found to be associated with regular PA (Duncan, Duncan, & Strycker, 2005; King, Tergerson, & Wilson, 2008; Leslie, Owen, Salmon,

Bauman, & Sallis, 1999; Manley, 1996; Molloy, Dixon, Hamer, & Sniehotta, 2010; Sallis, Prochaska, & Taylor, 2000). Previous research has indicated that support from significant others (e.g., parents and peers) can affect physical behaviors during adulthood (Thompson, Humbert, & Mirwald, 2003). One study aimed at college students found that males were 48% more likely to report insufficient activity levels and females were 55% more likely to report insufficient activity levels if they received low social support from their families (Leslie et al., 1999). Furthermore, males and females who reported low social support from friends were 45% and 23% more likely to be insufficiently active than those who had high social support from friends. Thus, males and females appear to be influenced differently by social influences. This supports previous research by Flaherty and Richman (1989) who found evidence that closer relationships are more important for women than men. In addition, the source of social support may play different roles. For example, parents act as role models and provide informational (e.g., discussing PA), emotional (e.g., encouraging participation in PA), and logistical (e.g., transportation) support (Duncan et al., 2005; Robbins et al., 2008), and peers provide support through social integration (e.g., companionship), emotional support (e.g., encouragement), instrumental support (e.g., sharing equipment), and informational support (Duncan et al., 2005). These behaviors can directly (e.g., participating in PA) or indirectly (e.g., modeling PA) affect behaviors in young adulthood (Beets, Vogel, Chapman, Pitetti, & Cardinal, 2007; Duncan et al., 2005; Ha, Abbott, Macdonald, & Pang, 2009), as exemplified by Leslie et al. (1999) who reported that low levels of family and peer support were "the strongest psychosocial attributes associated with being insufficiently active" (p. 25).

Most studies have measured social support for either moderate (MPA) or vigorous (VPA) PA as the number of times that parents or peers encouraged participation in PA (Dowda,

Dishman, Pfeiffer, & Pate, 2007; King et al., 2008; Leslie et al., 1999), modeled PA (Beets et al., 2007), participated in exercise (Leslie et al., 1999) or provided transportation (Duncan et al., 2005; Dowda et al., 2007). These are considered types of *received support* (i.e., self- reported support from others during a specified time frame; Verhofstadt, Buysse, Rosseel, & Peene, 2006). However, as discussed by Wilson and Spink (2012), the association between social influences and PA may not be static because other variables may moderate or mediate this relationship (Frazier, Tix, & Barron, 2004). This is important because "recognizing that activity is variable suggests that we are dealing with a moving target that may need to be accounted for when examining relationships with social influences" (Wilson & Spink, 2012, p. 2). One of the few studies to measure an aspect of support other than received support found that children who were extremely close to their parents (e.g., shared thoughts and feelings with parents, wanted to be like their parents, and felt that their parents cared for them) adapted their PA levels to match their parents' PA behaviors (Dzewaltowski, Ryan, & Rosenkranz, 2008).

Recent research has also focused on the role of *perceived support* (i.e., support that a person believes would be available if needed; Verhofstadt et al., 2006). However, PA literature related to this area is very limited. Sarason, Sarason, and Shearin (1986) originally proposed that general perceptions of support develop in early childhood from parents. Then, later in life, specific relationships "grow out of a history of experiences with specific others and reflect the unique ways in which [people] view each of these others" (Pierce, Sarason, & Sarason, 1991, p. 1028). In addition, measures of specific relationships differ from general perceptions of support (Verhofstadt et al., 2006) because individuals can move to a new environment (e.g., going to college) and believe supportive relationships will develop when none currently exist (Pierce et al., 1991). However, while evidence indicates that parents and peers can be a major influence on

PA behaviors (Sallis et al., 2000), no studies were found that investigated the role of perceived support from specific relationships in the PA or exercise domain, even though previous research has found that specific relationships are distinct from each other (Verhofstadt et al., 2006). Thus, the purpose of this study was to examine the influence of perceived social support from specific (i.e., mother, father, and a special person) and general (i.e., family and peers) relationships on health-related beliefs (i.e., physical self-concept and life satisfaction) and behaviors (e.g., MPA).

Perceived support in a specific relationship is commonly measured with the Quality of Relationships Inventory (QRI; Pierce et al., 1991). Pierce et al. (1991) found moderate to strong associations for the QRI scales of SUPPORT (e.g., extent that a person can rely on the other person), DEPTH (e.g., extent that both individuals are committed and positively value their relationship), and CONFLICT (e.g., extent that a person feels anger or ambivalence towards the other person) with parental relationships. Thus, socially supportive relationships were described as positive, secure, and displaying little conflict, whereas negative relationships were a source of conflict and ambivalence (Pierce et al., 1991). In addition, past research has compared QRI constructs with various psychosocial variables (e.g., loneliness, self-esteem, and anxiety; Ptacek, 1999) and found that it is related to current social behavior (Gurung, Sarason, & Sarason, 1997) and perceived relationship quality with another person (Rostosky, Galliher, Welsh, & Kawaguchi, 2000). The QRI is useful because it corresponds to recent developments in social support research, and it measures various close relationships (e.g., friendships, family members, and spouses; Verhofstadt et al., 2006).

Social support is considered an essential part of a person's social environment and is associated with positive health practices that influence life satisfaction (Malinauskas, 2010; Simons, Aysan, Thompson, Hamarat, & Steele, 2002). For example, college students with more

satisfying family relationships have reported greater life satisfaction (Bailey & Miller, 1998; Yalçum, 2011). While no studies were found that compared social support and physical self-concept (i.e., a person's perception of his or her appearance, health, fitness, etc.), social support should be indirectly related with physical self-concept because higher social support has been positively associated with PA (Leslie et al., 1999), and PA has been positively associated with physical self-concept (Scarpa, 2011). However, previous research in the PA literature has focused on the amount of received support from significant others. Only one study (Dowda et al., 2007) was found that discussed how perceived support affected PA, but the authors' operational definition was more closely related to Verhofstadt et al.'s (2006) definition of received support. Thus, to measure perceived support, this study compared perceived support to psychosocial variables (i.e., satisfaction with life and physical self-concept) that are related with PA participation (Hagger, Chatzisarantis, & Biddle, 2002; Melin, Fugl-Meyer, & Fugl-Meyer, 2003; Scarpa, 2011). It was hypothesized that higher self-reported levels of support and depth in relationships would be related to greater life satisfaction, increased positive physical self-concepts, and more PA behaviors. In addition, higher levels of self-reported conflict were hypothesized to be related to lower life satisfaction and less positive physical self-concepts.

Methods

Participants

Four hundred eight college students participated in this study. No one was excluded based on race or ethnicity, but participants had to have a living mother and father figure (e.g., biological parent) and one special person (e.g., best friend or sibling) in their life, in addition to their family and peers. As a result, 75 participants were dropped from the study by not having either parents or a special person. The final sample was based on 333 college students over the

age of 18 (M = 20.49, SD = 3.159). Eleven percent of the students were currently living at home, whereas 70% were living with roommates on or off campus. The remaining 19% were either living off-campus alone or with a significant other. Regarding college major, 53% of students were from the kinesiology department, and the remaining participants majored in psychology, music, business, education, or were undecided. An additional 30 participants (i.e., 15 kinesiology and 15 music students) were recruited to determine the test-retest reliability of the instruments used.

Measures

Five instruments were used in this study. They measured participants' self-reported perceived social support from specific (e.g., father) and general (e.g., family) sources, as well as their perception of satisfaction with life and physical self-description.

Quality of Relationships Inventory (QRI). The 25-item QRI (Pierce et al., 1991) uses a 4-point scale ranging from *not at all* (1) to *very much* (4). The QRI measures perceived support in specific relationships (e.g., parents, friend, and spouse) based on three subscales (i.e., SUPPORT, DEPTH, and CONFLICT). Seven items measure support (e.g., To what extent could you turn to this person for advice about problems?), six items measure depth (e.g., How positive a role does this person play in your life?), and 12 items measure conflict (e.g., How often do you have to work hard to avoid conflict with this person?). Scores are determined by averaging the totals for each subscale. For example, high scores on depth indicate that students perceive their relationship with their mother or father to be positive, important, and secure, and low scores on support indicate low amounts of perceived support. Pierce et al. (1991) reported alpha coefficients of .83, .88, and .83 for mothers and .85, .91, and .84 for fathers on the QRI scales of SUPPORT, CONFLICT, and DEPTH. Previous research also indicates that the QRI has good

reliability, discriminant and predictive validity, test–retest stability (Pierce et al., 1991) and can measure a broad range of specific relationships (Verhofstadt et al., 2006).

Multidimensional Scale of Perceived Social Support (MSPSS). The family and friends subscales of the MSPSS (Zimet, Dahlem, Zimet, & Farley, 1988) measure perceived social support. Both subscales use a 7-point scale ranging from *strongly disagree* (1) to *strongly agree* (7) and contain 4 items (e.g., My family really tries to help me and My friends really try to help me). Responses are averaged for each subscale. Zimet et al. (1988) previously found alpha coefficients of .87, and .85 for family and friends.

Satisfaction With Life (SWL). The SWL questionnaire (Diener, Emmons, Larsen, & Griffin, 1985) measures general life satisfaction (Malinauskas, 2010; Yalçum, 2011) with 5 items on a 7-point scale ranging from *strongly disagree* (1) to *strongly agree* (7). Scores range from 7 (i.e., low satisfaction) to 35 (i.e., high satisfaction). Sample items include: I am satisfied with my life and The conditions of my life are excellent. Diener et al. (1985) reported an internal consistency value of .87 and a test-retest correlation of .82 after two weeks. In addition, other studies have established convergent validity with other measures of life satisfaction (Diener et al., 1985; Pavot, Diener, Colvin, & Sandvik, 1991).

Physical Self-Description Questionnaire-Short (PSDQ-S). The PSDQ-S (Marsh, Martin, & Jackson, 2010) is a short form of the Physical Self-Description Questionnaire (PSDQ; Marsh, Richards, Johnson, Roche, & Tremayne, 1994). The PSDQ-S contains 40 items that measure 9 components of physical self-concept (i.e., activity, appearance, body fat, coordination, endurance, flexibility, health, sport, and strength) and two global components (i.e., global physical self-concept and self-esteem) using a 6-point true-false response scale. Sample items include: I am a physically strong person, I feel good about who I am physically, and My waist is

too large. Marsh et al. (2010) found that PSDQ-S had strong psychometric properties and construct validity in relation to the PSDQ. They reported that the PSDQ-S had reliability estimates of at least .80 on all 11 PSDQ-S scales and had strong convergent and discriminant validity (Marsh et al., 2010). In addition, mean alphas for all 11 scales ranged from .81 to .91.

Demographic and physical activity items. Demographic items consisted of nine questions, including student ID#, age, gender, height, weight, ethnicity, marital status, living situation, and college major. In addition, items concerning PA behaviors (Centers for Disease Control and Prevention [CDC], 2005; 2011) were adapted from the Behavioral Risk Factor Surveillance System Survey (BRFSS). MPA and VPA was measured with six questions that asked participants to report the number of days per week that they engaged in MPA and VPA and the number of hours and minutes for each day. Yore et al. (2007) reported that kappa coefficients for test–retest reliability were 0.35-0.53 for MPA and 0.80-0.86 for VPA. The PA items were also compared to accelerometer data and kappa validity was 0.31 for MPA and 0.17 for VPA (Yore et al., 2007). A single item asked how many times per week in the past month that the participants engaged in activities to strengthen muscles (e.g., yoga, sit-ups, or push-ups). The 2008 Physical Activity Guidelines for Americans (PAG; CDC, 2005; 2011) were adapted for this study because previous research has indicated that PA is overestimated in self-report data (Watkinson, van Sluijs, Sutton Hardeman, Corder, & Griffin, 2010). To be considered highly active, participants had to report at least 150 minutes of MPA, 75 minutes of VPA, and two days of strength training per week. All other students were considered moderately active.

Procedures

After receiving approval from the university's Institutional Review Board, participants were recruited from undergraduate kinesiology, physical education, and music classes to

complete a questionnaire that measured different health-related beliefs and behaviors. When the researcher visited each class, participants were given informed consent forms explaining the purpose of the study and their rights as participants before completing the questionnaire. Afterwards, participants either signed-up for a time to complete the questionnaire outside of class, or they were given the opportunity to complete the questionnaire during class if the instructor gave consent to the researcher. For the test-retest group, all participants were recruited to complete the questionnaire at two separate times that was 14 ± 2 days apart.

Data analysis. Data was managed and analyzed using SPSS® version 20. Initial analysis included examining the skewness, kurtosis, means, standard deviations, internal consistency, and test-retest reliability of survey measures. Primary analysis included independent samples *t* tests and a multivariate analysis of variance that compared differences between gender (i.e., 141 males and 192 females) and activity levels (i.e., 203 highly active and 130 moderately active students). Pearson *r* correlations between survey scales and subscales were also found to test for possible relationships between groups (i.e., highly active males, moderately active males, highly active females, and moderately active females) and survey scales.

Results

All scales had alpha coefficient greater than .79, and all scales and items had a test-retest reliability coefficient higher than .82. Reliability coefficients were also found for self-reported PA items, such as BMI ($r = .50$), strength activities per week ($r = .65$), and MPA ($r = .23$) and VPA ($r = .28$) per week. To compare the mean difference of PA items between tests, a paired-samples *t* test was performed. Although no significant differences were found, the largest mean differences were found for MPA and VPA. Participants reported an average of 144 more minutes of MPA during the first visit compared to 83 more minutes of VPA during the second visit.

An independent samples *t* test (Table 1) was conducted to compare male and female students. Males self-reported significantly higher than females on BMI ($p < .05$), VPA ($p < .05$), strength activities per week ($p < .01$), support from fathers ($p < .05$), and the following 10 subscales of the PSDQ-S: activity ($p < .01$), appearance ($p < .01$), body fat ($p < .05$), coordination ($p < .01$), endurance ($p < .01$), global esteem ($p < .01$), global physical ($p < .01$), sports ($p < .01$), and strength ($p < .01$). This indicated that males were more likely to meet PA guidelines and to report a more positive physical self-concept. Females self-reported significantly higher than males on the QRI measures of support from a special person ($p < .05$), conflict with mothers ($p < .05$), conflict with fathers ($p < .01$), depth with a special person ($p < .01$), and the PSDQ-S subscale of flexibility ($p < .05$), which indicated that females pursued closer friendships and reported more conflict with parents than males.

Highly active and moderately active students were also compared using an independent samples *t* test (Table 2). Highly active students self-reported significantly higher amounts of MPA ($p < .01$), VPA ($p < .01$), strength ($p < .01$), and the following seven scales of the PSDQ-S: activity ($p < .01$), coordination ($p < .01$), endurance ($p < .01$), flexibility ($p < .01$), global physical ($p < .01$), sport ($p < .01$), and strength ($p < .01$). However, no significant differences were found for moderately active students.

In order to examine differences among highly active and moderately active male and female college students, a 2 (Gender) X 2 (PA level) MANCOVA controlling for BMI was conducted. The mean response scores from the measures of social support, SWL, physical self-concept, PA, and strengthening activities were used as the dependent measures (Table 3). The MANCOVA revealed a significant interaction effect between gender and PA level, Wilks' $\lambda = .83$, $F(26, 241) = 1.87$, $p = .008$, $\eta_p^2 = .17$. Power to detect the effect was .992. The follow-up

analysis indicated that the gender and PA level differences were related to conflict with fathers and the activity and body fat scales from the PSDQ-S. Specifically, moderately females (M = 2.19, SD = .70) were significantly more likely to report greater conflict with fathers than highly active males (M = 1.93, SD = .62), Cohen's d = 0.38. In addition, highly active males (M = 5.09, SD = .85) were significantly more likely to report greater amounts of perceived activity according to the PSDQ-S than moderately active females (M = 2.95; SD = 1.32), Cohen's d = 1.99, and highly active males (M = 4.57, SD = 1.41) were significantly more likely to report more perceived body fat than highly active females (M = 4.01; SD = 1.56), Cohen's d = 0.38.

Even though the interaction effect supersedes the main effects, it is interesting to note that main effects were found for gender, Wilks' $\lambda = .66$, $F(26, 241) = 4.775$, $p <. 01$, $\eta_p^2 = .34$, and activity level, Wilks' $\lambda = .53$, $F(26, 241) = 8.16$, $p <. 01$, $\eta_p^2 = .47$. Power to detect the effect was 1.00 for both gender and activity level. Follow-up univariate analysis on individual subscale items for gender indicated that males were significantly more likely than females at the $p < .05$ level to report a greater number of days performing strengthening activities and had higher PSDQ-S scores for activity, appearance, body fat, coordination, endurance, physical esteem, global esteem, sports, and strength. On the other hand, females were significantly more likely than males at the $p < .05$ level to self-report more conflict with each parent, support and depth with mothers, and depth with a special person. Additional univariate F tests on individual subscale items for activity level indicated that at the $p < .05$ level highly active students reported more minutes of MPA and VPA, number of days performing strengthening activities, and significantly higher PSDQ-S scores for activity, coordination, endurance, flexibility, global esteem, sport, and strength.

Pearson product-moment correlation coefficients were computed to assess the relationship between measures of perceived support with physical self-concept and SWL for highly active males and females (Table 4) and for moderately active males and females (Table 5). For highly active males, conflict and depth with mothers was significantly correlated with nine (r = -.24 to -.51) and eight (r = .22 to .36) subscales of the PSDQ-S. Weak to moderate relationships were found between SWL and both subscales of the MSPSS (r = .39 to .47), support from mothers (r = .33) and fathers (r = .37), and depth from mothers (r = .23), fathers (r = .25), and a special person (r = .25). For moderately active males, support from a special person was significantly correlated with flexibility (r = .35), sport (r = .45), and total PSDQ-S (r = .33) scores, but unlike highly active males, there was a moderate relationship between SWL and support (r = .36) and conflict (r = -.31) from a special person. In regards to highly active females, BMI was negatively related to support (r = -.28) and depth (r = -.31) from a special person, which might emphasize the greater importance of close relationships for females. In addition, SWL was significantly correlated with the family (r = .39) subscale of the MSPSS and all six subscales of support and depth from the QRI (r = .20 to r = 28) and conflict with mother (r = -.36) and father (r = -.26). Lastly, for moderately active females, perceived support from friends according to the MSPSS was positively related with seven subscales of the PSDQ-S (r = .22 to .41). SWL was significantly correlated with perceived support from family (r = .34) and friends (r = .24) from the MSPSS, and weak to moderate correlations were found for support (r = .31) and depth (r = .28) from mothers and support (r = .29) and depth (r = .34) from fathers.

Discussion

This study examined the influence of perceived support from parental and peer relationships on students' health related beliefs and behaviors. Acceptable test-retest reliability

coefficients were found for all scales and subscales, but PA items (i.e., BMI, MPA, VPA, and strength) resulted in less than acceptable coefficients. BMI was measured using participant's self-reported height and weight, and upon closer examination, greater variability was found with student's height than weight between tests, which might account for this difference. MPA, VPA, and strength items did not specify a period of time (e.g., the past week) in which to report PA behaviors so large differences were not expected between visits. Thus, the discrepancy between visits for the total amount of MPA and VPA and the days participating in strengthening activities might be due to the participants not being aware of their actual PA behaviors during the first visit. This emphasizes the importance of participants understanding what constitutes as PA behaviors in order to accurately report them because it could have affected how they responded during the second visit. In addition, the findings of this study indicated that a number of relationships existed between demographic variables and other health related beliefs (e.g., SWL and physical self-concept).

Males self-reported significantly more minutes of VPA per week and days of strength training than females, and they reported more perceived support from fathers. In addition, they self-reported significantly higher response scores than females on every subscale of the PSDQ-S except for flexibility and health, even though they reported having significantly higher BMI levels that were borderline overweight. In other words, they had a more positive perception of their appearance even though the average male in this study was almost overweight. The results of the current study also indicated that perceived body fat and activity based on the PSDQ-S differed significantly depending on whether the respondents were highly physically active or moderately physically active. Highly active males described themselves as being more active than moderately active females and having more body fat than highly active females, which

would suggest that either they already had more body fat, as indicated by BMI, or were also striving for larger body mass. Thus, it is possible that a direct, negative relationship may not exist between BMI and physical self-concept. Binkley et al. (2009) found that physical self-concept was related to perceived weight status (e.g., classifying oneself to be overweight) in college students. Approximately 42% of the students in their study incorrectly categorized themselves as being in the desirable weight category when they were actually overweight or obese according to BMI. The results from this study support Binkley and his colleague's findings that BMI alone might not accurately reflect physical self-concept.

In addition, females scored significantly higher on the amount of perceived support, conflict, and depth from a special person and conflict with their mother and father. Conflict with fathers differed significantly based on gender and activity level. That is, highly active females reported higher levels of conflict than highly active males. Females were engaged in deeper relationships than males with a significant person in their life, and they perceived more conflict with parents at this period of early adulthood. This supports previous research indicating that closer relationships are more important for females than males (Flaherty & Richman, 1989). Because women also tend to spend more time with their close friends (Yaughn & Nowicki, 1999), the higher scores for conflict and depth could be attributed to greater importance and time that women invest into their close relationships compared to men.

When looking at highly active as compared to moderately active students, neither group reported significantly different amounts of perceived support, but highly active students did report significantly more PA behaviors and higher scores on seven subscales of the PSDQ-S. Thus, higher levels of activity might lead to a more positive physical self-concept even though highly active and moderately active students reported nearly identical BMI scores. This provided

additional evidence that BMI alone might not explain differences between highly active and moderately active students' health-related beliefs and that perceived support might be a stronger determinant of PA beliefs and behaviors for gender rather than activity level.

Pearson *r* correlations associated with the subscales examined to determine the relationships between highly active males, moderately active males, highly active females, and moderately active females. For highly active males, significantly positive correlations were found between conflict and depth with mother and a majority of PSDQ-S factors, which indicated that males in this study still derived some understanding of their physical self-concept from their current relationship with their parents, especially from their mothers. In addition, almost every subscale of the MSPSS and the QRI was significantly correlated with SWL and the PSDQ-S scale of self-esteem. Supportive, in-depth relationships with friends and family appeared to be important for aspects of satisfaction and physical self-worth, and the lack of similar correlations for moderately active males indicated that other factors, such PA behaviors, might influence how males perceive themselves physically. Regarding highly active females, correlations between a majority of the MSPSS and QRI subscales with SWL suggested that perceived social support was related in a similar manner to highly active males. However, unlike moderately active males, significant correlations were also found for moderately active females between measures of perceived social support with SWL and the PSDQ-S scale of self-esteem. Thus, relationships appear to play an important role in females' lives and influence their perceptions of satisfaction and self-worth more than for males.

Strengths and Limitations

There were several strengths associated with the current study. This study was the first to measure social support in terms of the quality of students' relationships with parents and peers in

PA literature. In addition, previously validated scales were used to collect data, and the 2008 PAG were used to differentiate highly active and moderately active students. Lastly, college students were recruited from kinesiology, physical education, and music classes in order to gather a more diverse sample. Because participants from kinesiology and physical education classes would be more likely to have previous knowledge about or be interested in the physical and social benefits of PA, it was important to recruit participants who might not have these experiences.

Although there were many strengths, there were also several limitations with this study. First, self-report data is subject to social desirability bias (e.g., wanting to have a close relationship with parents), which may have influenced responses, and according to previous research, self-reported PA data may be overestimated (Watkinson et al., 2010). Second, to increase sample size, participants completed the questionnaire either in their classroom or signed up for another time to complete it, which could have possibly skewed the sample due to convenience sampling. While participants were expected to choose a special person who was a peer in college, it is possible that some chose a special person that was much younger (e.g., sibling) or older (e.g., grandparent). Lastly, the results of the test-retest group indicated that students did not report consistent MPA and VPA over a period of two weeks, which may have resulted from participants not understanding what constitutes as PA or their PA behaviors changing during the course of the study.

Implications and Conclusions

While highly active students did not necessarily have more socially supportive relationships, the quality of different relationships or the perception of available support might affect a person's health-related beliefs, such as physical self-description or satisfaction with life.

Health professionals can use these findings to develop and promote social environments that encourage PA. For example, health professionals, such as personal trainers and fitness instructors, could encourage their clients to pursue socially supportive relationships in their life to foster feelings of satisfaction and physical self-worth. These positive influences might result in or help to maintain healthy behaviors by looking beyond objective measures of social support. Specifically, females might benefit more than males from having at least one significant person (e.g., best friend, spouse, sibling, etc.) who is engaging in physical activity with them to recognize their efforts and provide emotional support during exercise and other life experiences.

This study also made several contributions to the social support literature. First, these findings highlight the different characteristics of social relationships and how these associations can influence different health beliefs and behaviors. Social support has widely been studied through objective measures that do not account for inherent differences between interpersonal relationships. Thus, there is a need for future research to expand from only measuring objective forms of social support (e.g., having a friend tell you to be physically active) to also include how perceived support, such as the quality of these different relationships, plays a role in positive health behaviors. For example, parents and peers may provide social support through objective means (e.g., paying fees or providing transportation), but that does not necessarily result in socially supportive relationships. Second, these findings emphasize the need for future research to compare perceived support and more traditional measures of social support in order to determine possible interactions (e.g., the influence of having supportive peers who also participate in PA). Third, future research should continue to find reliable and valid methods for measuring PA in large samples. While the survey items did not specify a period of time to report PA behaviors (e.g., the past week), the different amounts of self-reported MPA and VPA

between visits may indicate that students altered their responses after having a period of time to evaluate their PA behaviors. It may also be useful to better educate participants regarding what constitutes as MPA and VPA, and as exhibited by the test-retest group in this study, college students might not be fully aware of their current height and weight due to regular changes in activity during college. Lastly, younger age groups (e.g., middle school or high school) should be studied in the future to assess the role of the quality of parental and peer relationships during earlier stages of life.

Table 1

Means and Standard Deviations: Males vs. Females

	Males		Females	
	M	*SD*	*M*	*SD*
BMI	***25.24**	4.82	23.75	6.25
MPA	508.65	469.67	447.57	473.61
VPA	***415.21**	421.37	313.10	419.06
Strength	****3.35**	1.85	2.63	1.95
MSPSS				
$FA_{Support}$	6.19	1.24	6.03	1.35
$FR_{Support}$	5.96	1.01	6.15	1.07
QRI				
$M_{Support}$	3.31	.67	3.41	.67
$F_{Support}$	***3.16**	.75	2.96	.90
$SP_{Support}$	3.55	.55	***3.65**	.55
$M_{Conflict}$	1.89	.62	***2.04**	.68
$F_{Conflict}$	1.88	.62	****2.12**	.72
$SP_{Conflict}$	1.86	.55	1.83	.55
M_{Depth}	3.39	.63	3.50	.61
F_{Depth}	3.23	3.23	.78	3.18
SP_{Depth}	3.31	.58	****3.54**	.48
SWL	5.03	1.18	5.12	1.25
PSDQ-S	****4.75**	.63	4.30	.77
AC	****4.82**	.99	4.07	1.49
AP	****4.53**	.84	4.19	.90
BF	***4.52**	1.44	4.16	1.53
CO	****4.95**	.86	4.42	1.05
EN	****4.10**	1.20	3.53	1.47
ES	****5.16**	.65	4.92	.80
FL	3.97	1.33	***4.29**	1.31
GP	****4.66**	1.05	4.10	1.23
HE	5.22	.78	5.04	.94
SP	****4.87**	1.11	3.84	1.66
ST	****4.74**	.98	4.01	1.66

Note. FA = Family; FR = Friends; M = Mother; F = Father; SP = Special Person; AC = Activity; AP = Appearance; BF = Body Fat; CO = Coordination; EN = Endurance; ES = Global Esteem; FL = Flexibility; GP = Global Physical; HE = Health; SP = Sport; ST = Strength.

* $p < .05$. ** $p < .01$

Table 2

Means and Standard Deviations: Highly Active vs. Moderately Active

	Highly Active		Moderately Active	
	M	*SD*	*M*	*SD*
BMI	24.31	4.14	24.51	7.60
MPA	**603.52	485.79	268.91	367.67
VPA	**475.44	444.63	170.35	304.19
Strength	**3.80	1.45	1.59	1.84
MSPSS				
$FA_{Support}$	6.12	1.14	5.85	1.52
$FR_{Support}$	6.12	.96	6.00	1.12
QRI				
$M_{Support}$	3.41	.65	3.3	.70
$F_{Support}$	3.10	.81	2.97	.89
$SP_{Support}$	3.61	.46	3.6	.42
$M_{Conflict}$	1.96	.63	2.00	.71
$F_{Conflict}$	2.02	.67	2.02	.73
$SP_{Conflict}$	1.86	.54	1.83	.57
M_{Depth}	3.48	.59	3.40	.67
F_{Depth}	3.25	.80	3.13	.85
SP_{Depth}	3.42	.55	3.49	.51
SWL	5.12	1.24	5.03	1.18
PSDQ-S	**4.67	.67	4.21	.78
AC	4.96	.89	3.48	1.46
AP	4.33	.86	4.35	.94
BF	4.33	1.48	4.27	1.53
CO	**4.82	.93	4.37	1.05
EN	**4.17	1.17	3.13	1.47
ES	5.06	.72	4.95	.79
FL	**4.32	1.24	3.90	1.43
GP	**4.51	1.13	4.06	1.23
HE	5.14	.90	5.09	.86
SP	**4.57	1.37	3.81	1.67
ST	**4.58	1.01	3.91	1.36

Note. FA = Family; FR = Friends; M = Mother; F = Father; SP = Special Person; AC = Activity; AP = Appearance; BF = Body Fat; CO = Coordination; EN = Endurance; ES = Global Esteem; FL = Flexibility; GP = Global Physical; HE = Health; SP = Sport; ST = Strength.
* $p < .05$. ** $p < .01$

Table 3

2 (Gender) X 2 (Physical Activity) MANCOVA

	Highly Active				Moderately Active						
	Male (n = 79)		Female (n = 95)		Male (n = 38)		Female (n = 59)				
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*	*p*	η_p^2
MPA	659.24	513.99	542.05	431.56	212.63	171.41	304.41	439.55	3.47	.06	.01
VPA	528.67	455.61	443.68	458.78	206.71	253.71	160.34	380.14	.14	.70	.00
Strength	4.11	1.44	3.57	1.50	1.82	1.84	1.47	1.85	.23	.63	.00
MSPSS											
$FA_{Support}$	6.08	1.14	6.14	1.14	6.01	1.32	5.94	1.54	.18	.67	.00
$FR_{Support}$	6.01	1.00	6.26	.97	6.11	0.92	5.97	1.10	2.19	.14	.01
QRI											
$M_{Support}$	3.35	.68	3.46	.61	3.19	.63	3.40	.65	.32	.57	.00
$F_{Support}$	3.18	.76	3.00	.87	3.15	.73	2.93	.87	.02	.88	.00
$SP_{Support}$	3.58	.43	3.65	.50	3.53	.50	3.62	.37	.08	.78	.00
$M_{Conflict}$	1.93	.56	2.05	.66	1.84	.63	2.16	.69	1.60	.21	.01
$F_{Conflict}$	1.93	.62	2.08	.69	1.69	.50	2.19	.70	4.28	**.04**	.02
$SP_{Conflict}$	1.90	.50	1.83	.56	1.80	.63	1.91	.56	1.45	.23	.01
M_{Depth}	3.45	.56	3.52	.59	3.27	.71	3.50	.63	.94	.33	.00
F_{Depth}	3.26	.80	3.22	.84	3.19	.79	3.14	.82	.00	.97	.00
SP_{Depth}	3.28	.57	3.52	.53	3.32	.61	3.55	.44	.01	.91	.00
SWL	5.00	1.24	5.17	1.21	5.10	.93	4.93	1.36	1.04	.31	.00

Note. FA = Family; FR = Friends; M = Mother; F = Father; SP = Special Person; η_p^2 = partial eta squared.

(*table continues*)

Table 3 (continued).

	Highly Active				Moderately Active						
	Male (n = 79)		Female (n = 95)		Male (n = 38)		Female (n = 59)				
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*	*p*	η_p^2
PSDQ-S	4.82	.62	4.49	.69	4.54	.63	3.99	.80	1.31	.25	.01
AC	5.09	.85	4.83	.96	4.28	1.11	2.95	1.32	15.69	**.00**	.06
AP	4.50	.78	4.11	.90	4.47	.94	4.24	.88	.56	.46	.02
BF	4.57	1.41	4.01	1.56	4.32	1.59	4.31	1.57	4.16	**.04**	.02
CO	5.02	.85	4.52	.96	4.62	.88	4.13	1.12	.01	.93	.00
EN	4.35	1.01	3.91	1.29	3.63	1.49	2.79	1.49	1.23	.27	.01
ES	5.14	.63	4.97	.80	5.27	.60	4.73	.87	3.77	.05	.01
FL	4.01	1.24	4.55	1.18	3.83	1.42	3.97	1.46	1.25	.27	.01
GP	4.74	1.02	4.22	1.14	4.34	1.14	3.84	1.19	.04	.85	.00
HE	5.15	.85	5.09	.96	5.28	.68	5.01	.93	.93	.34	.03
SP	4.98	1.06	4.09	1.51	4.54	1.15	3.43	1.71	.35	.55	.00
ST	4.87	.88	4.28	1.06	4.39	1.12	3.60	1.37	.57	.45	.00

Note. AC = Activity; AP = Appearance; BF = Body Fat; = CO = Coordination; EN = Endurance; ES = Global Esteem; FL = Flexibility; GP = Global Physical; HE = Health; SP = Sport; ST = Strength; η_p^2 = partial eta squared.

Table 4

Intercorrelations Among Perceived Support and Physical Activity, Satisfaction with Life, and Physical Self-Concept for Highly Active Students

		Highly Active Males																									
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Highly Active Females	1. MPA	-	.37**	.01	.08	.08	.09	.10	.09	.05	-.09	-.03	.10	.14	.03	.05	-.01	-.06	-.03	.12	.05	-.02	-.12	.05	.05	.00	.03	-.15
	2. VPA	.42**	-	.15	.07	.10	-.04	-.05	-.19	.06	.18	.00	.15	.03	.03	.05	.20	.22*	.05	.12	.18	.08	.02	.00	.29**	.05	.27**	.16
	3. Strength	-.06	.16	-	.08	.18	.10	.04	.16	-.20	-.09	-.14	.08	.03	-.03	.00	.44**	.39**	.36**	.14	.33**	.21*	.34**	.31**	.31**	.22*	.20	.41**
	4. $FA_{Support}$	.00	.09	.09	-	.46**	.55**	.68**	.27**	-.38**	-.22*	-.17	.50**	.60**	.18	.39**	.14	.15	.07	-.02	.22*	.07	.35**	-.02	.22*	-.03	.16	.18
	5. $FR_{Support}$	-.08	.09	-.08	.44**	-	.32**	.40**	.29**	-.15	-.14	-.36**	.18	.28**	.26*	.47	.08	.14	.05	.13	.02	.07	.36**	-.01	.15	-.09	-.04	.06
	6. $M_{Support}$	-.12	-.05	.10	.54**	.14	-	.59**	.13	-.30**	-.14	-.07	.76**	.50**	.00	.33**	.25*	.12	.16	.08	.23*	.15	.33**	.08	.17	.02	.17	.07
	7. $F_{Support}$	-.03	-.10	.12	.43**	.10	.40**	-	.32**	-.23*	-.37**	-.09	.38**	.82**	.18	.36**	.22*	.18	.10	.05	.23*	.27**	.37**	.16	.27**	-.09	.17	.12
	8. $SP_{Support}$	-.16	.02	-.02	-.03	.20*	.03	-.19	-	-.27**	-.18	-.26*	.04	.23*	.66**	.18	.15	.16	.08	.08	.23*	.18	.29**	.09	.08	.05	.07	.06
	9. $M_{Conflict}$	.09	.05	-.02	-.41**	-.21*	-.65**	-.18	-.08	-	.44**	.34**	-.19	-.14	-.17	-.27**	-.38**	-.29**	-.08	-.12	-.51**	-.29**	-.45**	-.07	-.26*	-.27*	-.25*	-.24*
	10. $F_{Conflict}$	.13	.07	.02	-.40**	-.21*	-.14	-.60**	.06	.23*	-	.25*	-.05	-.26*	-.04	-.12	-.17	.02	-.05	-.21*	-.14	-.04	-.28**	-.16	-.08	-.25*	.09	-.12
	11. $SP_{Conflict}$	.06	.02	.06	.02	-.19	-.01	.21*	-.47**	.34**	.09	-	.02	-.05	-.18	-.17	-.15	-.19	.12	-.15	-.17	-.24*	-.25*	-.10	-.09	-.12	.15	-.07
	12. M_{Depth}	-.11	.07	.12	.53**	.14	.72**	.27**	-.12	-.55**	-.09	.04	-	.45**	.08	.23*	.36**	.22*	.26*	.05	.26*	.16	.33**	.18	.23*	.08	.28**	.23*
	13. F_{Depth}	-.03	-.08	.08	.45**	.10	.20*	.83**	-.27**	-.06	-.63**	.24*	.39**	-	.24*	.25*	.16	.14	.10	.01	.19	.21*	.27**	.14	.18	-.13	.16	.07
	14. SP_{Depth}	.01	.14	.05	.03	.21*	.01	-.19	.75**	-.11	.12	-.36**	.11	-.14	-	.25*	.04	.13	-.07	.01	.09	.11	.18	-.09	.13	-.12	.02	.11
	15. SWL	-.08	.07	.05	.38**	.19*	.28**	.25**	.20*	-.36**	-.26**	-.12	.23*	.21*	.26**	-	.23*	.23*	.08	.18	.12	.19	.48**	.07	.47**	-.14	-.01	.11
	16. PSDQ-S	.11	.15	.07	.16	.07	.13	.18	.06	-.20*	-.16	-.04	.00	.08	.03	.44**	-	.86**	.56**	.51**	.82**	.68**	.73**	.52**	.74**	.46**	.74**	.66**
	17. AC	.09	.31**	.38**	.22*	.04	.13	.13	-.06	-.18	-.12	.01	.15	.12	.03	.31**	.64**	-	.43**	.29**	.67**	.63**	.61**	.41**	.63**	.26*	.67**	.64**
	18. AP	.11	.01	.06	.16	.00	.15	.22*	.02	-.01	-.04	.13	-.06	.09	-.05	.13	.48**	.15	-	.14	.39**	.20	.51**	.23*	.39**	.22*	.41**	.45**
	19. BF	.10	.01	-.11	-.08	.02	-.03	-.04	.23*	-.02	-.01	-.13	-.11	-.08	.16	.26**	.47**	.07	.14	-	.29**	.38**	.27*	.22*	.47**	.19	.21*	.04
	20. CO	.12	.11	-.02	.10	.04	.11	.11	-.06	-.22*	-.08	.03	.04	.02	.01	.31**	.77**	.55**	.25*	.23*	-	.53**	.55**	.46**	.49**	.33**	.69**	.49**
	21. EN	.10	.15	.17	.11	-.02	.10	.15	.13	-.16	-.10	-.13	.01	.08	.13	.38**	.81**	.55**	.39**	.39**	.53**	-	.48**	.39**	.45**	.12	.43**	.29**
	22. ES	.10	.04	.08	.26**	.04	.08	.27**	-.06	-.22*	-.22*	-.06	-.05	.16	-.08	.46**	.78**	.45**	.54**	.20*	.56**	.58**	-	.25*	.56**	.26*	.43**	.55**
	23. FL	-.01	.04	-.06	-.03	-.03	.04	.08	-.02	-.12	-.11	-.07	-.05	.03	-.09	.18	.42**	.25**	.12	.17	.41**	.29**	.27**	-	.32**	-.03	.27*	.25*
	24. GP	.17	.06	.04	.16	.09	.20*	.15	.09	-.10	-.01	.01	.08	.09	.05	.47**	.80**	.36**	.49**	.57**	.47**	.65**	.58**	.30**	-	.15	.46**	.56**
	25. HE	-.02	.08	.08	-.02	.17	.03	.08	.24*	-.11	-.15	-.18	-.11	-.11	.11	.18	.46**	.15	.07	.19*	.23*	.35**	.38**	.03	.22*	-	.27*	.30**
	26. SP	.11	.17	.08	.22*	.10	.21*	.16	-.10	-.20*	-.04	.03	.15	.14	-.06	.22*	.64**	.49**	.16	.12	.53**	.45**	.44**	.05	.49**	.12	-	.48**
	27. ST	.13	.20*	.15	.18	-.03	.12	.17	-.10	-.15	-.12	-.03	.02	.10	-.07	.27**	.74**	.49**	.38**	.16	.56**	.62**	.57**	.20*	.54**	.19	.65**	-

Note. FA = Family; FR = Friends; M = Mother; F = Father; SP = Special Person; AC = Activity; AP = Appearance; BF = Body Fat; = CO = Coordination; EN = Endurance; ES = Global Esteem; FL = Flexibility; GP = Global Physical; HE = Health; SP = Sport; ST = Strength.

* $p < .05$. ** $p < .01$

Table 5

Intercorrelations Among Perceived Support and Physical Activity, Satisfaction with Life, and Physical Self-Concept for Moderately Active Students

		Moderately active Males																									
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Moderately Active Females	1. MPA	-	-.18	-.18	.01	-.12	.10	-.05	-.16	-.08	.07	-.36*	-.01	-.06	-.20	.02	-.22	-.20	-.25	.19	-.20	-.11	-.21	-.12	-.17	.08	-.28	-.13
	2. VPA	.56**	-	.31*	-.15	.14	-.06	.13	.10	.07	.14	.22	-.10	.04	.03	-.06	.40**	.42**	-.07	.24	.39**	.47**	.25	.11	.37*	-.37*	.42**	.24
	3. Strength	-.12	.16	-	-.01	-.01	.13	.16	.06	.07	.01	.08	.00	.01	-.09	-.05	.39**	.24	.28	.04	.31*	.28	.02	.17	.26	-.21	.22	.44**
	4. $FA_{Support}$	-.16	-.02	-.03	-	.22	.55**	.41**	-.01	-.14	-.26	.09	.62**	.47**	.19	-.01	-.29	-.24	-.09	-.20	-.11	-.22	-.06	-.22	-.27	.07	-.10	-.21
	5. $FR_{Support}$	-.26*	.09	-.12	.50**	-	.33*	.34*	.29	-.29	-.22	-.02	.30*	.34*	.26	.27	.09	.19	.00	.08	.02	.24	.07	-.02	.24	-.06	-.06	-.08
	6. $M_{Support}$	-.01	.09	-.02	.65**	.28*	-	.33*	.02	-.35*	.01	.12	.74**	.25	.22	.35*	-.17	-.17	.00	-.11	-.06	-.15	-.04	-.22	.05	-.16	-.10	-.09
	7. $F_{Support}$	-.05	.09	.04	.62**	.27*	.55**	-	.18	.22	-.14	.00	.31*	.86**	.31*	.05	-.02	.02	-.09	.01	.00	.15	-.03	-.23	.08	-.03	.04	-.17
	8. $SP_{Support}$	-.26*	-.05	.16	-.05	.37**	.03	.02	-	-.01	.17	-.40*	.01	.11	.78**	.36*	.33*	.20	.19	.05	.35*	.21	.15	.20	.17	.02	.45**	.05
	9. $M_{Conflict}$	-.01	-.01	-.01	-.36**	-.07	-.61**	-.30**	.08	-	.27	.10	-.26	.20	-.01	-.22	.16	.29	.22	-.06	.16	.09	.13	-.30*	.10	.07	.26	.19
	10. $F_{Conflict}$	-.05	-.10	.02	-.46**	-.08	-.39**	-.75**	-.04	.39**	-	.06	.06	-.17	.11	-.02	.04	.21	.13	-.08	.10	-.12	-.02	-.31*	.07	-.01	.23	.16
	11. $SP_{Conflict}$	.02	-.05	.10	.00	-.14	-.14	-.09	-.21	.23*	.10	-	.07	.06	-.23	-.31*	-.04	.12	-.03	-.24	-.06	.07	-.04	.05	-.08	-.13	.01	.06
	12. M_{Depth}	.00	.08	-.04	.56**	.25*	.86**	.42**	-.17	-.46**	-.21	-.02	-	.48**	.25	.32*	-.12	-.11	.03	.10	-.05	-.15	.01	-.31*	.02	-.11	-.06	-.18
	13. F_{Depth}	-.04	.08	.12	.56**	.22	.46**	.88**	-.09	-.19	-.64**	.00	.53**	-	.33*	.03	-.04	.00	-.05	.14	-.07	.15	-.16	-.19	.04	.05	-.04	-.26
	14. SP_{Depth}	-.13	-.08	.08	.03	.34**	.07	-.02	.67**	.12	.01	.04	.07	.08	-	.20	.08	.09	.18	-.18	.24	.03	.02	.04	.04	.01	.23	-.12
	15. SWL	-.09	.15	.17	.34**	.23*	.31**	.29**	-.03	-.25*	-.22	-.39**	.28*	.34**	-.09	-	.22	.05	.32*	.30*	.08	.11	.25	-.04	.37*	.03	.06	.04
	16. PSDQ-S	-.08	.27*	.22	.14	.41**	.20	.21	.22	-.09	-.07	.03	.19	.17	.03	.19	-	.73**	.49**	.37*	.82**	.74**	.71**	.43**	.78**	.24	.66**	.63**
	17. AC	.06	.40**	.41**	.02	.14	.06	.02	.15	.03	.02	.04	-.01	-.01	.12	.11	.70**	-	.38**	.04	.62**	.45**	.51**	.18	.51**	.24	.49**	.45**
	18. AP	-.04	.07	.02	.27*	.17	.31**	.38**	.11	-.08	-.16	-.25*	.30**	.38**	-.05	.27*	.37**	.14	-	-.06	.38**	.19	.31*	.03	.27	.40**	.28	.41**
	19. BF	-.11	.14	.11	.18	.29**	.08	.20	.10	-.09	-.21	-.18	.07	.14	-.11	.20	.46**	.15	.28*	-	.09	.48**	.12	.03	.53**	-.08	.15	-.12
	20. CO	-.10	.23*	.08	.06	.36**	.11	-.04	.09	-.01	.20	.06	.16	-.03	.00	.20	.74**	.53**	.15	.14	-	.46**	.60**	.37*	.55**	.10	.67**	.58**
	21. EN	.05	.31**	.27*	.10	.16	.11	.09	.18	-.13	-.08	.07	.02	.01	.09	.00	.77**	.74**	.18	.19	.45**	-	.43**	.37*	.67**	.01	.40**	.31*
	22. ES	-.19	.13	.11	.35**	.37**	.25*	.32**	.07	-.26*	-.11	-.17	.27*	.26*	-.13	.40**	.69**	.29**	.42**	.33**	.48**	.38**	-	.12	.60**	.16	.56**	.52**
	23. FL	-.01	.12	.04	.07	.34**	.18	.11	.01	.01	.12	.07	.19	.09	-.07	.14	.74**	.42**	.22*	.27*	.71**	.43**	.45**	-	.25	.06	.07	.22
	24. GP	.07	.24*	.20	.20	.22*	.20	.32**	.06	-.08	-.16	-.08	.15	.22	-.13	.29**	.68**	.37**	.45**	.64**	.34**	.46**	.59**	.40**	-	.01	.40**	.37*
	25. HE	-.19	-.12	-.04	-.02	.15	.09	-.01	.05	-.22*	-.07	.12	.03	-.02	.04	.08	.29*	-.01	-.05	.02	.09	.23*	.10	.07	.09	-	.00	.12
	26. SP	.05	.17	.05	-.09	.22*	-.09	-.08	.21	.01	.17	.08	.02	-.08	.13	-.13	.66**	.55**	.05	.22*	.49**	.56**	.32**	.42**	.33**	.02	-	.41**
	27. ST	.09	.30**	.10	.00	.15	.11	.11	.19	.05	.05	.18	.15	.08	.15	.02	.74**	.56**	.21	.08	.58**	.68**	.42**	.45**	.44**	.14	.56**	-

Note. FA = Family; FR = Friends; M = Mother; F = Father; SP = Special Person; AC = Activity; AP = Appearance; BF = Body Fat; = CO = Coordination; EN = Endurance; ES = Global Esteem; FL = Flexibility; GP = Global Physical; HE = Health; SP = Sport; ST = Strength.

* $p < .05$. ** $p < .01$

APPENDIX A

REVIEW OF LITERATURE

Physical Activity and The Role of Social Support Across The Lifespan

There are many health benefits of regular physical activity (PA; i.e., any bodily movement produced by skeletal muscles that results in energy expenditure) including improved fitness, blood pressure control, weight management, and better mood (Caspersen, Powell, & Christenson, 1985; McGuire, Hannan, Neumark-Sztainer, Cossrow, & Story, 2002). However, recent estimates indicate that over one-third of adults and almost 17% of children and adolescents in the United States are obese (Ogden, Carroll, Kit, & Flegal, 2012). A majority of obese adults were not considered obese as children (Ogden et al., 2012), and a lack of available time for PA, changing attitudes towards PA, and social factors (e.g., lack of support) have been implicated as reasons for the decline in PA over time (Nelson, Kocos, Lytle, & Perry, 2009). These issues are important because a strong relationship between PA levels during childhood and as an adult has not been found (Trudeau, Laurencelle, & Shephard, 2009), and even parental PA, or modeling, has not been found to directly influence children to adopt an active lifestyle (King, Tergerson, & Wilson, 2008). Thus, PA should be viewed as "a complex phenomenon related to a number of personal, social and environmental variables" (Ketteridge & Boshoff, 2008, p. 278). In fact, social support (i.e., behaviors that help an individual reach desired goals or outcomes) is a widely studied concept that has been found to be associated with regular PA (Duncan, Duncan, & Strycker, 2005; King et al., 2008; Manley, 1996; Molloy, Dixon, Hamer, & Sniehotta, 2010)

Social Support

As stated previously, social support typically refers to receiving assistance to achieve a desired goal (Duncan et al., 2005). Two models (i.e., the stress-buffering and main effect model) have been used predominately to identify the role of social support on health outcomes (Cohen & Wills, 1985). The stress-buffering model (Cobb, 1976) suggests that social support plays a role

in only demanding circumstances by buffering the effect of stress. Daily events are evaluated based on a person's perceived coping abilities to meet situational demands, and this process determines the presence of stress (Uchino, 2004). A person's perceived inability to complete daily tasks would result in an increase in stress, but social support is believed to alleviate these stressors. Previous studies using this model have typically investigated the role of functional support (i.e., received and perceived support) from different sources (e.g., parents or peers) and how these different relationships protect against stress (Reese, 2007). *Received support* refers to a person's report of getting support by others during a specified time frame, whereas *perceived support* describes the amount of support that a person believes would be available if needed or expectations of available support. However, according to the stress-buffering model, a lack of stress would negate the need for social support. In addition, the simplicity of the model fails to account for why and when support is sought, and it does not consider how different relationships influence the effectiveness of social support (Uchino, 2004).

On the other hand, the main effects model proposes that a direct relationship exists between social support and positive outcomes. This suggests that increases in social support are met with an increase in positive outcomes regardless of the existence of stress, and it emphasizes the benefits of having a social network (Reese, 2007). These social networks are important because they can promote healthy behaviors (e.g., PA and nutrition), and previous research has evaluated these social characteristics in terms of a person's structural support (i.e., the existence and relatedness of social ties; Uchino, 2004). Methods for measuring structural support have varied from simple (e.g., size) to complex (e.g., strength of ties). However, the model is unable to evaluate the quality or the function of the social relationships, and past research has typically only evaluated simple measures (Uchino, 2004). In addition, within the direct effects model, it is

important to consider that social networks can be a source of distress if a person's resents the attempts to influence behavior. Thus, social influences can have a positive or negative influence on behavior depending on a person's interpretation of the social interaction.

Physical Activity and Social Support

There is a lack of consistency among researchers regarding the definition of social support and how to measure it (Reese, 2007). This might be the result of the diverse number of disciplines, such as epidemiology, psychology, and medicine, which have studied social support, but Uchino (2004) found that these definitions typically refer to the structure (e.g., social network) of a person's social life and the specific functions that it provides (e.g., emotion support). As a result, it is difficult to draw generalizable conclusions based on current findings across disciplines, and unfortunately, PA literature has also remained largely atheoretical in regards to social support. These studies have instead focused predominately on the different sources and types of social support and the importance of these factors during different life stages. For example, parents have been found to act as role models and provide informational (e.g., discussing PA), emotional (e.g., encouraging participation in PA), and logistical (e.g., transportation) support (Duncan et al., 2005; Robbins, Stommel, & Hamel, 2008), and peer influence, which tends to increase during adolescence, provides opportunities for social integration (e.g., companionship), emotional support (e.g., encouragement), instrumental support (e.g., sharing equipment), and informational support (Duncan et al., 2005). These types of social support have been found to directly (e.g., participating in PA) or indirectly (e.g., encouraging PA) affect behavior (Beets, Vogel, Chapman, Pitetti, & Cardinal, 2007; Duncan et al., 2005; Ha, Abbott, Macdonald, & Pang, 2009). This evidence validates social support as an important correlate of PA (Duncan et al., 2005) because positive relationships have been found between

social support and PA in children, adolescents, and adults (Duncan et al., 2005; King et al., 2008; Trost, Owen, Bauman, Sallis, & Brown, 2002).

Children. While the role of social support from peers in children PA behaviors has not been thoroughly investigated, an immediate and lasting effect has been found in regards to children's current and future PA levels and their parent's involvement in their physical activities (Thompson et al., 2003). One of the most reliable relationships between parental influences and children's PA levels has been encouragement (King et al., 2008; McGuire et al., 2002) and performing PA with their child (Beets et al., 2007). However, parents influence their children's PA levels differently. Mothers tend to provide assistive support (e.g., transportation or paying fees), whereas fathers tend to overtly influence behavior by planning or participating in activities with their children (Beets et al., 2007). According to Beets et al. (2007), these distinctions in parental interactions are possibly due to parenting style differences. The nurturing, protecting relationship between mothers and children can be manifested as the removal of barriers (e.g., transportation) and providing encouragement for PA (Beets et al., 2007). Fathers, on the other hand, have been described as performing an "activation" role during a child's development. Through increased levels of physical play, fathers explicitly use their own activity to influence their child's activity (Beets et al., 2007). For example, Robbins et al. (2008) found a significant effect for father support during six reference days on middle school students' total number of minutes and days of PA and PA self-definition (i.e., how students view themselves in regards to PA). Since support from fathers accounted for a significant amount of the variance, Robbins and colleagues (2008) highlighted the potential impact that fathers could play in children's PA behaviors.

Adolescents. Childhood is considered an important time to learn attitudes and skills for PA, but Sallis and colleagues' (2000) meta-analysis on correlates of PA in children and adolescents found a negative relationship between age and PA in 70% of 27 studies. Therefore, to better understand the relationship between childhood and adolescent PA and adult PA attitudes and behaviors, Thompson et al. (2003) interviewed 31 men and women who were in three different levels of PA participation (i.e., active, average, inactive). They found that men who were active during adolescents had parents who provided financial (e.g., paying registration fees), physical (e.g., transportation), and emotional (e.g., encouragement) support and were role models. These findings supported previous research that indicated that parents are a major influence on boys' PA behaviors and attitudes (Sallis et al., 2000). Most of the women cited a decrease in PA, but those who remained active reported the same types of support from parents as the boys. Active women described their parents as providing financial, physical, and emotional support as well as being positive role models. In addition, average women recalled positive and negative social support, whereas inactive women reported negative parental influence (i.e., not being active role models, not understanding the value of PA, or not allowing participation in sports). These findings implied that, regardless of gender, positive and negative social influences can have a lasting effect on adult PA (Thompson et al., 2003).

Furthermore, King and colleagues (2008) contended that a better understanding of motivation factors during adolescence is needed. Therefore, they measured the effect of social support on adolescents' attitudes and involvement in PA. Adolescents who had parental encouragement to exercise engaged in significantly more days of moderate and vigorous activity. In addition, adolescents who received parental encouragement ($p \leq .001$) were significantly more likely to experience the benefits of exercise (e.g., having fun, improving self-esteem and energy

level, reducing stress, and becoming strong). A lack of parental encouragement (p = .002) was significantly related with viewing the following as barriers to exercise: no time, place, safe environment, interest, or motivation to exercise, not knowing how to exercise, not enjoying exercise, wanting to do other things, and not thinking exercise will provide results. However, there were no significant differences for adolescents that did or did not have a parent that exercised, which supported previous research that found a lack of evidence for a direct relationship between parent and child PA behaviors (Telama et al., 2005). The authors suggested that factors other than having a parent that exercises could influence adolescent PA because participating in similar activities to their parents might not be popular to adolescents (King et al., 2008).

Regarding support from peers, adolescence is a time when parents' influence over their children tends to decrease and peers influence increases (McGue, Elkins, Walden, & Iacono, 2005). Robbins et al. (2008) reported on two studies (Duncan et al., 2005; Prochaska, Rodgers, & Sallis, 2002) that both indicated peer support had a greater effect on adolescents than parental support because adolescents tend to spend more time with their friends than parents. In addition, Duncan et al. (2005) reported that older adolescents reported less support from their family than did younger adolescents, and Park and Kim's (2008) meta-analysis found that "social support was a consistently important determinant, especially parental support and peer support, which were significantly and positively associated with adolescents' PA" (p. 124). However, other research has reported conflicting results on the effects of peer support on adolescent PA. Sallis et al.'s (2000) systematic review did not find a relationship with peer modeling of activity, and evidence for an association with peer support was inconclusive, whereas parental support was consistently related to adolescent PA. Therefore, while these differences may be due to sampling

or methodological differences, these results indicate that social support from parents and peers plays an important role in adolescent PA.

Young adulthood. Young adulthood is often characterized by change, exploration, and the adoption of lifestyle behaviors (Dowda, Ainsworth, Addy, Saunders, & Riner, 2003), but unfortunately, the sharpest decrease in PA tends to occur between adolescence and young adulthood (Rovniak, Anderson, Winett, & Stephens, 2002). Haskell and colleagues (2007) reported that approximately 50% of young adults currently meet ACSM guidelines for PA, but this percentage decreases over time. Thus, to better understand the reasons for the decline in PA in young adults, Leslie and colleagues (1999) measured characteristics of insufficiently active college students (i.e., energy expenditure of 0-799 kcal/week from PA) and the effect of gender and social, personal, and perceived environment variables. They found that levels of family and peer support were "the strongest psychosocial attributes associated with being insufficiently active" (Leslie et al., 1999, p. 25). Adults who reported low levels of social support from family or friends were 23-55% more likely to be insufficiently active than those with high levels of support. These results were later supported by systematic reviews by Trost and colleagues (2002) and also by Wendel-Vos and colleagues (2007), who identified social support as one of the only substantial environment determinants of PA for adults. Trost et al. (2002) evaluated 15 studies that included a measure of social support from friends and family and found a positive association with PA in every study. In addition, Trost and colleagues (2002) found that women were especially receptive to social support. Women who reported high levels of PA social support were approximately twice as likely to meet ACSM guidelines for aerobic PA (i.e., at least 30 minutes of PA for at least five days) than those reporting low support (Trost et al., 2002).

Summary

Due to growing obesity rates, health professionals face the complex issue of promoting PA in an increasingly sedentary population, and even though social support has been defined and measured differently by researchers, previous research has indicated that it is an important correlate for PA throughout the lifespan. During childhood, parents can support healthy behaviors through encouragement and performing PA with their children, and while PA tends to decrease during adolescents, active adolescents have reported having parents who provided financial, physical, and emotional support. However, reaching young adulthood results in many lifestyle behaviors changes and the sharpest decline in PA tends to occur at this time. Thus, it is especially important to receive social support from both family and peers after reaching adulthood in order to help maintain sufficient activity levels.

APPENDIX B

INFORMED CONSENT

University of North Texas Institutional Review Board
Informed Consent Notice

Before agreeing to participate in this research study, it is important that you read and understand the following explanation of the purpose, benefits and risks of the study and how it will be conducted.

Title of Study: The Influence of Perceived Support from Parental and Peer Relationships on Students' Health-related Beliefs and Behaviors.

Student Investigator: Mitch Barton, University of North Texas (UNT) Department of Kinesiology, Recreation, and Health Promotion. Supervising Investigator: Dr. Scott Martin

Purpose of the Study: You are being asked to participate in a research study designed to investigate the associations between perceived support from parental and peer relationships with students' exercise behaviors and attitudes.

Study Procedures: You will be asked to answer a series of questions in a survey packet that will take about 15 minutes of your time.

Foreseeable Risks: No foreseeable risks are involved in this study.

Benefits to the Subjects or Others: This study is not expected to be of any direct benefit to you, but we hope to learn more about how students' parental and peer relationships influence their health-related beliefs and behaviors.

Compensation for Participants: Every participant who completes the questionnaire will receive one entry for a chance to win one of eight $25 cash prizes. The winners will be selected through a random drawing.

Procedures for Maintaining Confidentiality of Research Records: Participant surveys will be coded with numbers so that individual responses will remain anonymous. Surveys and electronic data will be stored in a locked office. The confidentiality of your individual information will be maintained in any publications or presentations regarding this study.

Questions about the Study: If you have any questions about the study, you may contact Mitch Barton at John.Barton@unt.edu or Dr. Scott Martin at Scott.Martin@unt.edu.

Review for the Protection of Participants: This research study has been reviewed and approved by the UNT Institutional Review Board (IRB). The UNT IRB can be contacted at (940) 565-3940 with any questions regarding the rights of research subjects.

Research Participants' Rights:

Your participation in the survey confirms that you have read all of the above and that you agree to all of the following:

- Mitch Barton has explained the study to you and you have had an opportunity to contact him/her with any questions about the study. You have been informed of the possible benefits and the potential risks of the study.
- You understand that you do not have to take part in this study, and your refusal to participate or your decision to withdraw will involve no penalty or loss of rights or benefits. The study personnel may choose to stop your participation at any time.
- Your decision whether to participate or to withdraw from the study will have no effect on your grade or standing in this course.
- You understand why the study is being conducted and how it will be performed.
- You understand your rights as a research participant and you voluntarily consent to participate in this study.
- You understand you may print a copy of this form for your records.

I, _____, have read the description of the research project for which this consent pertains, and I hereby consent to participate in this study.

_____ _____

Signature of participant Date

REFERENCES

Arnett, J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist, 55*, 469-480. doi:10.1037//0003-066X.55.5.469

Bailey, R. C., & Miller, C. (1998). Life satisfaction and life demands in college students. *Social Behavior & Personality, 26*, 51-56. doi:10.2224/sbp.1998.26.1.51

Beets, M. W., Vogel, R., Chapman, S., Pitetti, K. H., & Cardinal, B. J. (2007). Parent's social support for children's outdoor physical activity: Do weekdays and weekends matter? *Sex Roles, 56*, 125-131. doi:10.1007/s11199-006-9154-4

Binkley, S., Fry, M. D., & Brown, T. C. (2009). The relationship of college students' perceptions of their BMI and weight status to their physical self-concept. *American Journal of Health Education, 40*, 139-145.

Calfas, K. J., Sallis, J. F., Lovato, C. Y., & Campbell, J. J. (1994). Physical activity and its determinants before and after college graduation. *Medicine, Exercise, Nutrition & Health, 3*, 323-334.

Caspersen, C. J., Pereira, M. A., & Curran, K. M. (2000). Changes in physical activity patterns in the United States, by sex and cross-sectional age. *Medicine & Science in Sports & Exercise, 32*, 1601-1609.

Caspersen, C. J., Powell, K. E., & Christenson, G. M. (1985). Physical activity, exercise, and physical fitness: Definitions and distinctions for health-related research. *Public Health Reports, 100*, 126-131.

Centers for Disease Control and Prevention. (2005). *Behavioral Risk Factor Surveillance System Survey Questionnaire*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention.

Centers for Disease Control and Prevention. (2011). *Behavioral Risk Factor Surveillance System Survey Questionnaire*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention.

Cobb, S. (1976). Social support as a moderator of life stress. *Psychosomatic Medicine*, *38*, 300-314.

Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin, 98*, 310-357.

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment, 49*, 71.

Dinger, M., & Waigandt, A. (1997). Dietary intake and physical activity behaviors of male and female college students. *American Journal of Health Promotion, 11*, 360-362. doi:10.4278/0890-1171-11.5.360

Dowda, M., Ainsworth, B., Addy, C., Saunders, R., & Riner, W. (2003). Correlates of physical activity among U.S. young adults, 18 to 30 years of age, from NHANES III. *Annals of Behavioral Medicine: A Publication of the Society of Behavioral Medicine, 26*, 15-23.

Dowda, M., Dishman, R. K., Pfeiffer, K. A., & Pate, R. R. (2007). Family support for physical activity in girls from 8th to 12th grade in South Carolina. *Preventive Medicine, 44*, 153-159. doi:10.1016/j.ypmed.2006.10.001

Duncan, S. C., Duncan, T. E., & Strycker, L. A. (2005). Sources and types of social support in youth physical activity. *Health Psychology, 24*(1), 3-10. doi:10.1037/0278-6133.24.1.3

Dzewaltowski, D. A., Ryan, G. J., & Rosenkranz, R. R. (2008). Parental bonding may moderate the relationship between parent physical activity and youth physical activity after school. *Psychology of Sport & Exercise, 9*, 848-854. doi:10.1016/j.psychsport.2007.10.004

Flaherty, J., & Richman, J. (1989). Gender differences in the perception and utilization of social support: Theoretical perspectives and an empirical test. *Social Science & Medicine, 28*, 1221-1228. doi:10.1016/0277-9536(89)90340-7

Frazier, P. A., Tix, A. P., & Barron, K. E. (2004). Testing moderator and mediator effects in counseling psychology research. *Journal of Counseling Psychology, 51*, 115-134. doi:10.1037/0022-0167.51.1.115

Gurung, R. R., Sarason, B. R., & Sarason, I. G. (1997). Personal characteristics, relationship quality, and social support perceptions and behavior in young adult romantic relationships. *Personal Relationships, 4*, 319-339.

Ha, A., Abbott, R., Macdonald, D., & Pang, B. (2009). Comparison of perceived support for physical activity and physical activity related practices of children and young adolescents in Hong Kong and Australia. *European Physical Education Review, 15*, 155-173. doi:10.1177/1356336X09345219

Hagger, M. S., Chatzisarantis, N. D., & Biddle, S. H. (2002). A meta-analytic review of the theories of reasoned action and planned behavior in physical activity: Predictive validity and the contribution of additional variables. *Journal of Sport & Exercise Psychology, 24*, 3-32.

Haskell, W. L., Lee, I., Pate, R. R., Powell, K. E., Blair, S. N., Franklin, B. A., …Bauman, A. (2007). Physical activity and public health: Updated recommendation for adults from the American College of Sports Medicine and the American Heart Association. *Medicine & Science in Sports & Exercise, 39*, 1423-1434.

Ketteridge, A., & Boshoff, K. (2008). Exploring the reasons why adolescents participate in physical activity and identifying strategies that facilitate their involvement in such activity. *Australian Occupational Therapy Journal, 55*, 273-282.

King, K. A., Tergerson, J. L., & Wilson, B. R. (2008). Effect of social support on adolescents' perceptions of and engagement in physical activity. *Journal of Physical Activity & Health, 5*, 374-384.

Leslie, E., Owen, N., Salmon, J., Bauman, A., Sallis, J., & Lo, S. (1999). Insufficiently active Australian college students: Perceived personal, social, and environmental influences. *Preventive Medicine, 28*, 20-27. doi:10.1006/pmed.1998.0375

Malinauskas, R. (2010). The associations among social support, stress, and life satisfaction as perceived by injured college athletes. *Social Behavior & Personality, 38*, 741-752. doi:10.2224/sbp.2010.38.6.741

Manley, A. (1996). *Physical activity and health: A report of the surgeon general*. Atlanta: U.S. department of health and human services.

Marsh, H. W., Martin, A. J., & Jackson, S. (2010). Introducing a short version of the physical self description questionnaire: New strategies, short-form evaluative criteria, and applications of factor analyses. *Journal of Sport & Exercise Psychology, 32*, 438-482.

Marsh, H. W., Richards, G. E., Johnson, S. S., Roche, L. L., & Tremayne, P. P. (1994). Physical self-description questionnaire: Psychometric properties and a multitrait-multimethod analysis of relations to existing instruments. *Journal of Sport & Exercise Psychology, 16*, 270-305.

McGue, M., Elkins, I., Walden, B., & Iacono, W. G. (2005). Perceptions of the parent-adolescent relationship: A longitudinal investigation. *Developmental Psychology, 41*, 971-984.

McGuire, M. T., Hannan, P. J., Neumark-Sztainer, D., Cossrow, N. H. F., & Story, M. (2002). Parental correlates of physical activity in a racially/ethnically diverse adolescent sample. *Journal of Adolescent Health, 30*, 253-261. doi:10.1016/S1054-139X(01)00392-5

Melin, R., Fugl-Meyer, K., & Fugl-Meyer, A. (2003). Life satisfaction in 18- to 64-year-old Swedes: In relation to education, employment situation, health and physical activity. *Journal of Rehabilitation Medicine, 35*, 84-90. doi:10.1080/16501970306119

Molloy, G. J., Dixon, D., Hamer, M., & Sniehotta, F. F. (2010). Social support and regular physical activity: Does planning mediate this link? *British Journal of Health Psychology, 15*, 859-870. doi:10.1348/135910710X490406

Nelson, M. C., Kocos, R., Lytle, L. A., & Perry, C. L. (2009). Understanding the perceived determinants of weight-related behaviors in late adolescence: A qualitative analysis among college youth. *Journal of Nutrition Education and Behavior, 41*, 287-292. doi:10.1016/j.jneb.2008.05.005

Ogden C. L., Carroll M. D., Kit B. K., & Flegal K. M. (2012). *Prevalence of obesity in the United States*, 2009–2010. (Data Brief No. 82). Hyattsville, MD: National Center for Health Statistics.

Park, H. & Kim, N. (2008). Predicting factors of physical activity in adolescents: A systematic review. *Asian Nursing Research, 2*, 113-128.

Pavot, W., Diener, E., Colvin, C., & Sandvik, E. (1991). Further validation of the satisfaction with life scale: Evidence for the cross-method convergence of well-being measures. *Journal of Personality Assessment, 57*, 149-161. doi:10.1207/s15327752jpa5701_17

Pierce, G. R., Sarason, I. G., & Sarason, B. R. (1991). General and relationship-based perceptions of social support: Are two constructs better than one? *Journal of Personality and Social Psychology, 61*, 1028-1039. doi:10.1037//0022-3514.61.6.1028

Prochaska, J. J., Rodgers, M. W., & Sallis, J. F. (2002). Association of parent and peer support with adolescent physical activity. *Research Quarterly for Exercise and Sport, 73*, 206-210.

Ptacek, J. L. (1999). Parental relationships and coping with life stress. *Anxiety, Stress & Coping, 12*, 427-453. doi:10.1080/10615809908249320

Reese, T. (2007). Influence of social support on athletes. In S. Jowett & D. Lavallee (Eds.), *Social psychology in sport* (pp. 224-231). Champaign, IL: Human Kinetics.

Robbins, L. B., Stommel, M., & Hamel, L. M. (2008). Social support for physical activity of middle school students. *Public Health Nursing, 25*, 451-460. doi:10.1111/j.1525-1446.2008.00729.x

Rostosky, S. S., Galliher, R. V., Welsh, D. P., & Kawaguchi, M. C. (2000). Sexual behaviors and relationship qualities in late adolescent couples. *Journal of Adolescence, 23*, 583-97. doi:10.1006/jado.2000.0345

Rovniak, L. S., Anderson, E. S., Winett, R. A., & Stephens, R. S. (2002). Social cognitive determinants of physical activity in young adults: A prospective structural equation analysis. *Annals of Behavioral Medicine, 24*, 149-156.

Sallis, J. F., Prochaska, J. J., & Taylor, W. C. (2000). A review of correlates of physical activity of children and adolescents. *Medicine & Science in Sports & Exercise, 32*, 963-975.

Sarason, I. G., Sarason, B. R., & Shearin, E. N. (1986). Social support as an individual difference variable: Its stability, origins, and relational aspects. *Journal of Personality and Social Psychology, 50*, 845-855. doi:10.1037/0022-3514.50.4.845

Scarpa, S. (2011). Physical self-concept and self-esteem in adolescents and young adults with and without physical disability: The role of sports participation. *European Journal of Adapted Physical Activity, 4*(1), 38-53.

Serdula, M. K., Williamson, D. F., Byers, T., Freedman, D. S., Ivery, D., & Coates, R. J. (1993). Do obese children become obese adults? A review of the literature. *Preventive Medicine, 22*, 167-177. doi:10.1006/pmed.1993.1014

Simons, C., Aysan, F., Thompson, D., Hamarat, E., & Steele, D. (2002). Coping resource availability and level of perceived stress as predictors of life satisfaction in a cohort of Turkish college students. *College Student Journal, 36*, 129.

Thompson, A. M., Humbert, M., & Mirwald, R. L. (2003). A longitudinal study of the impact of childhood and adolescent physical activity experiences on adult physical activity perceptions and behaviors. *Qualitative Health Research, 13*, 358-377. doi:10.1177/1049732302250332

Trost, S. G., Owen, N. N., Bauman, A. E., Sallis, J. F., & Brown, W. W. (2002). Correlates of adults' participation in physical activity: Review and update. *Medicine & Science in Sports & Exercise, 34*, 1996-2001.

Trudeau, F., Laurencelle, L., & Shephard, R. (2009). Is fitness level in childhood associated with physical activity level as an adult? *Pediatric Exercise Science, 21*, 329-338.

Uchino, B. N. (2004). *Social support and physical health: Understanding the health consequences of relationships*. New Haven, CT: Yale University Press.

Verhofstadt, L. L., Buysse, A., Rosseel, Y., & Peene, O. J. (2006). Confirming the three-factor structure of the quality of relationships inventory within couples. *Psychological Assessment, 18*, 15-21. doi:10.1037/1040-3590.18.1.15

Wallace, L. S., Buckworth, J., Kirby, T. E., & Sherman, W. M. (2000). Characteristics of exercise behavior among college students: Application of social cognitive theory to predicting stage of change. *Preventive Medicine, 31*, 494-505. doi:10.1006/pmed.2000.0736

Watkinson, C., van Sluijs, E. F., Sutton, S., Hardeman, W., Corder, K., & Griffin, S. J. (2010). Overestimation of physical activity level is associated with lower BMI: A cross-sectional analysis. *International Journal of Behavioral Nutrition & Physical Activity*, *7*, 768-777. doi:10.1186/1479-5868-7-68

Wendel-Vos, W. W., Droomers, M. M., Kremers, S. S., Brug, J. J., & van Lenthe, F. F. (2007). Potential environmental determinants of physical activity in adults: A systematic review. *Obesity Reviews, 8*, 425-440.

Wilson, K. S., & Spink, K. S. (2012). Predicting parental social influences: The role of physical activity variability. *Psychology of Sport & Exercise, 13*, 1-9. doi:10.1016/j.psychsport.2011.08.005

Yalçum, İ. (2011). Social support and optimism as predictors of life satisfaction of college students. *International Journal for the Advancement of Counseling, 33*, 79-87. doi:10.1007/s10447-011-9113-9

Yaughn, E., & Nowicki, S., Jr. (1999). Close relationships and complementary interpersonal styles among men and women. *Journal of Social Psychology, 139*, 473-478.

Yore, M. M., Ham, S. A., Ainsworth, B. E., Kruger, J., Reis, J. P., Kohl III, H. W., & Macera, C. A. (2007). Reliability and validity of the instrument used in BRFSS to assess physical activity. *Medicine & Science in Sports & Exercise, 39*, 1267-1274. doi:10.1249/mss.0b013e3180618bbe

Zimet, G. D., Dahlem, N. W., Zimet, S. G., & Farley, G. K. (1988). Multidimensional scale of perceived social support. *Journal of Personality Assessment*, *52*, 30-41. doi:10.1207/s15327752jpa5201_2