

An Exploratory Study of 4th, 5th, and 6th Grade Summer Camp Participants' Attitudes and Intentions Towards Physical Activity

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Physical inactivity is a growing problem among children, particularly school-aged youth. Research suggests children are especially prone to inactivity in the summer months when access to structured school-time and extra-curricular activities is reduced. Community programs like residential summer camps offer an excellent environment for engaging children in enjoyable physical activities while also helping them learn to be more physically active when they return home. Pre-existing attitudes often influence how much change a program inspires in an individual. The purpose of this study was to explore 4th, 5th, and 6th grade summer camp participants' attitudes towards physical activity. Results of this study indicate that youth have a fairly neutral, though positive, attitude towards physical activity and that parental support of physical activity is still extremely important, even at this age. Campers also indicated relatively high intentions to remain physically active in the two weeks after the camp ended.

Keywords: physical activity, summer camp, children, theory of planned behavior

Introduction

Lack of physical activity (PA) in the nation, and in particular, Louisiana, is extremely prominent. With advanced technology, readily available motorized transportation, and drive-thru windows, many people do not get adequate amounts of PA. Inactivity, along with poor diet, may contribute to chronic diseases and decreased quality of life (Centers for Disease Control and Prevention [CDC], 2011). Inactivity in youth is particularly troubling since habits established at a young age often carry into adulthood. The *2008 Physical Activity Guidelines for Americans* recommend that youth get a minimum of 60 minutes of physical activity every day (U.S. Department of Health and Human Services [USDHHS], 2008). In Louisiana, only 24.4% of youth meet these recommendations (CDC, 2012). Compelling evidence of a link between summertime sedentary behaviors and increased weight and BMI is also emerging (Baranowski et al., 2014; Franckle, Adler, & Davison, 2014; McCue, Marlatt, Sirard, & Dengel, 2013).

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Review of Literature

The School Setting and Youth Physical Activity

While school settings are highly researched, they offer a context for examining the efficacy of different strategies to increase PA. Enhanced physical education (PE) focuses on providing high quality lessons led by experienced staff to increase the frequency, duration, and/or intensity of PA (USDHHS, 2012). Research suggests that students in PE classes that followed a structured curriculum were more physically active than students who attended PE classes without structure (McKenzie et al., 2004). Practices such as active recess and in-class activity breaks show promise for increasing PA. Active recess involves the use of activity zones on the playground with quasi-structured PA (e.g., tag games) during recess (Huberty et al., 2011). In-class activity breaks incorporate PA into regular classroom lessons. Results indicated the breaks increased the frequency and intensity of PA (Erwin, Abel, Beighle, & Beets, 2009). A critical success factor emerging from these studies was the teacher. Each study highlighted the need for hiring highly qualified personnel to teach PE and for training regular classroom teachers to incorporate activity into lessons and encourage more physical activity during recess (Huberty et al., 2011).

The most compelling argument to emerge in recent meta-analyses was that children do not generalize increased PA to other settings outside of school (Baranowski et al., 2014; Franckle et al., 2014; McCue et al., 2013). Thus, attention is turning to multi-environment interventions that have demonstrated added effectiveness over implementation of a single strategy (Salmon, Booth, Phongsavan, Murphy, & Timperio, 2007). The interventions that were most effective at raising PA levels used a variety of educational components and often engaged the family or community as part of the intervention (van Sluijs, McMinn, & Griffin, 2007).

Summer Camp and Youth Physical Activity

Community settings offer a venue for increased PA outside of school hours. Camps, both day and residential, are a promising site, because they provide numerous PA opportunities to a captive audience over an extended period of time. One study of urban youth found that children attending summer camp were more physically active than youth who spent the summer under parent or caregiver supervision (Tovar et al., 2010). The camp setting also offers unstructured, leisure time PA (LTPA), such as active transport, swimming, hiking, or canoeing. A study of LTPA in low-income, elementary-aged youth found that children were physically active for a substantial amount of time during designated school-time leisure periods (McKenzie, Crespo, Baquero, & Elder, 2010). Children were less physically active when they were directly supervised and more physically active when equipment was available. During these leisure times, girls were more physically active with unstructured activities, whereas no difference in PA levels was seen in boy's LTPA levels (McKenzie et al., 2010).

Although camps can be successful at increasing PA during camp sessions, the challenge mirrors that of schools in figuring out how to motivate youth to continue physically active behavior after camp. A study of urban female youth who attended a 4-week day camp found that increases in PA were not maintained after the 4-week camp even though an internet-based follow-up intervention was implemented (Baranowski et al., 2003). Mandating PA does not necessarily lead to intrinsically motivated behaviors. Once the enticement of summer camp activities and the directive of school PA classes are removed, many youth revert to former, less physically active pursuits like video gaming.

Child Development and Physical Activity

Children in 4th through 6th grade (ages 9 to 11) become much more independent, especially from the family (Schickedanz, Schickedanz, Forsyth, & Forsyth, 2001). The importance of friendships grows at this stage of development, and dramatic physical, cognitive, and social-emotional changes occur. Although the rate of change varies by individual and by gender, youth in this age range begin making their own decisions and begin developing the ability to move from concrete to more abstract thinking, enabling them to plan and to implement decisions (Piaget & Cook, 1952). Many children move from a preference for large groups of acquaintances with whom they associate to a more selective and smaller group of friends. Peers rapidly gain importance for feeling accepted (Schickedanz et al., 2001). Feelings of self-worth bolster resistance to negative peer pressure and help children make better choices. The development of youths' sense of responsibility, an important milestone, increases along with their sense of independence (Lam, McHale, & Crouter, 2012). Prevention and early intervention programs during this period are timely (Rodgers, Paxton, & McLean, 2014).

Cognitively, children of this age move from concrete to more abstract thinking and are better able to understand another person's point of view (Piaget & Cook, 1952). They also have an increased attention span, making it more feasible for them to remain with one concept longer (Salkind, 2004). Children still respect adult authority and are more likely than older children to trust the guidance of adults and their efforts to instill healthy practices for youth. During this time, children can develop a sense of responsibility and respect for themselves and others whether or not authority figures are around. Youth of this age need help with goal setting but understand the concept (Steinberg, 2005). They need reminders, however, to stay on target. They are able to comprehend the importance of exercise when clear rules and expectations are expressed by others they respect and are able to understand the reasoning behind the formation of healthy habits (Yurgelun-Todd, 2007). When this information is coupled with conversations about their growth and development, the reasoning becomes even clearer (Steinberg, 2005).

Theoretical Framework

The Theory of Planned Behavior explains that human behavior is influenced by attitudes and self-efficacy, as well as by social norms surrounding the behavior (Ajzen, Joyce, Sheikh, & Cote, 2011). PA attitudes may be defined in terms of instrumental attitude, feeling that carrying out a behavior will result in something good or useful, or affective attitude, feeling enjoyment from performing a behavior (Rhodes & Courneya, 2005). Rhodes and Courneya (2005) found that programs which emphasized instrumental attitude change may have more impact on changing PA behaviors than those programs aimed at changing perceptions of personal control over PA or social support of PA. The study looked at thresholds, or tipping points, at which change occurred (Rhodes & Courneya, 2005). Threshold analysis involved identifying the minimum dosage which yielded optimal results. In this particular case, achieving extremely positive instrumental attitudes resulted in the greatest increases in PA behaviors.

Normative beliefs (NB) consider a person's judgment of the probability of support or criticism of PA behaviors from significant others, while subjective norms refer to perceptions of social peer pressure to perform or not perform a behavior (Ajzen et al., 2011). The role of subjective norms in PA behaviors is still unclear. While some researchers have found evidence that raising subjective norms from a lower to a moderate level yields the most PA behavior benefits, other researchers found that subjective norms played a trivial role (Rhodes & Courneya, 2005).

The Theory of Planned Behavior models intentions to exercise as an outcome of changes in attitudes and beliefs (Ajzen et al., 2011). Intentions often lead to behavior changes. Change in exercise behavior is a complex process that is supported by learner knowledge, skills, attitudes, and intentions (Ajzen et al., 2011). Additionally, validation from significant members of youths' social circles is often necessary. This validation may come from family members, close friends, or in the case of youth, teachers or other significant adults.

Purpose and Research Questions

The purpose of this study was to explore 4th, 5th, and 6th grade summer camp participants' attitudes towards physical activity. The research questions that guided this study included:

1. What PA attitudes (PA-EA), beliefs surrounding importance of social support of PA (PA-PSS), and PA intentions (PAI) do campers possess?
2. Is 4-H camp a viable context for increasing campers' knowledge of PA guidelines?
3. Does a relationship exist between selected camper demographics (sex and grade), PA-EA, PA-PSS, and PAI?
4. Do selected variables (sex, grade, PA-EA, and PA-PSS) explain a statistically significant proportion of the variance in PAI?

Method

Participants

This study reports on a secondary analysis of data collected from campers at a residential summer camp as part of camp's annual program evaluation. This study was approved by the LSU AgCenter Institutional Review Board. The camp was conducted for nine weeks with a new set of campers arriving each week. At the beginning of the week, campers chose an educational track and were then randomly assigned to one of three groups within their chosen track. A census of campers in group A of each track was conducted each of the nine weeks ($N = 489$).

A little over two-thirds of the respondents were female ($n = 339$; 69.3%; See Table 1), and a majority of the respondents were White ($n = 396$; 81.0%; See Table 1). Nearly half of the campers responding to the survey had just completed 5th grade ($n = 215$; 44.0%; See Table 1).

Table 1. Selected Camper Demographics

	<i>n</i>	%
Sex		
Female	339	69.3
Male	150	30.7
Race		
White	396	81.0
African American	71	14.5
American Indian or Alaskan Native	8	1.6
Asian/Pacific Islander	5	1.0
Other	9	1.8
Previous Year's Grade		
4 th grade	155	31.7
5 th grade	215	44.0
6 th grade	119	24.3

Program Characteristics

The Louisiana 4-H summer camp offers 4th-6th grade youth learning experiences that teach youth how to appreciate the outdoors, live together as a group, get along with others, and appreciate a diverse group of people. Campers are involved in focused educational experiences, as well as a variety of recreational activities. The program reaches approximately 3,500 4th-6th grade youth each year. The camp operates for nine weeks beginning in late May and ending the last week of July, with a different group of campers attending camp each week.

Each camp week was comprised of approximately 91 total hours at camp, with 44 hours (48%) devoted to structured and unstructured educational or recreational activities. Youth spent approximately 12 of the 44 hours (27% of activity time) each week in structured educational

programs and approximately 18 hours (41%) in structured recreational activities. The remaining 14 hours (32%) was unstructured educational or recreational time. A significant portion of time at camp was spent in physically active endeavors like walking, swimming, playing sports, dancing, and canoeing.

Instrumentation

To measure physical activity attitudes and perceived social support for PA, eleven items were adapted from two existing measures (Martin et al., 2005; Rhodes & Courneya, 2005). The scales were initially developed for use with an older audience (i.e., college students). Since a primary concern was ensuring that the scales were appropriate for the intended audience of this study, adaptations were made to the scales to make both the items and response categories more suitable for a younger audience (Bass, 2014). Appropriate psychometric tests were used to establish the quality of the revised instrument. Procedures used and results are reported below for each scale.

Physical activity exercise attitudes (PA-EA). This 6-item construct was used at pretest to measure pre-existing favorable or unfavorable attitudes towards exercise and represented the extent to which youth liked exercise and believed it was useful (Rhodes & Courneya, 2005). Adaptions to the scale included using more youth-recognizable synonyms for two of the anchor words (e.g., changed “beneficial” to “helpful”) and changing from a 7-point semantic differential scale to a 5-point semantic differential scale. This change in scale length was made because research suggests youth lacked the cognitive skill necessary to differentiate the nuances in the longer scale (Bass, 2014). Since the scale underwent major revision, it was treated as a newly created scale, and exploratory factor analysis was used to determine the factor structure. The modified six-item PA-EA scale did not form two constructs representing affective and use domains as reported by Rhodes and Courneya (2005). Instead, a unidimensional construct emerged, explaining 34.5% of the variance. The Cronbach's alpha for the scale was computed post hoc in this study and was 0.737.

Physical activity perceived social support (PA-PSS). This 5-item construct represented the perceived importance of an individual's social group approving or disapproving of the person exercising and was used at pretest to assess pre-existing beliefs (Martin et al., 2005). The response scale for these items was changed from a 7-point semantic differential to a 4-point Likert scale to reduce the cognitive complexity of the response categories with no neutral midpoint. The five items of the PA-PSS factored into one distinct construct as expected from the survey from which it was adapted and explained 43.9% of the variance. The post hoc Cronbach's alpha for the scale in this study was 0.761.

Physical activity intention (PAI). PAI was measured using a single researcher-developed item asking youth to report how often they intended to exercise (in days) in the two weeks following

camp. Responses were collected using an ordinal scale (i.e., 0, 1-4, 5-9, 10-14) as part of the camp program posttest assessment.

Physical activity knowledge (PA-K). PA-K was measured at both pretest and posttest with multiple-choice items probing youth knowledge of the recommended duration and frequency of physical activity. For purposes of this evaluation, duration was defined as the number of minutes youth should engage in physical activity for a given day. Frequency was defined as the number of days each week that youth should engage in physical activity. Responses were coded as either correct or incorrect. The test-retest reliability for the knowledge questions was 0.694.

Analysis

Camper knowledge, attitudes, and perceived social support were described using means and standard deviations. Camper PA intentions were described using frequencies and percentages. Change in knowledge from pretest to posttest was assessed using means and *t*-tests. The relationships among selected variables were analyzed using Spearman's *rho*. Ordinal regression was used to determine if sex, grade, PA-EA, and PA-PSS explained a statistically significant proportion of the variance in PAI. Since seven contrasts were planned, an *a priori* decision was made to set the statistical significance level at .007 in order to control the familywise error rate.

Results

Research question one was targeted at describing campers pre-existing PA attitudes and beliefs and post-camp PA intentions. Campers held a relatively neutral attitude towards PA and a relatively neutral overall perception of social support.

Table 2. Means and Standard Deviations for Camper PA Attitudes and Perceived Social Support

Construct	<i>M</i>	<i>SD</i>
PA-EA ^a	0.68	.752
PA-PSS ^b	2.70	.647

^aUsed a 5-point semantic differential scale (-2 = *Really Like Me*, -1 = *Like Me*, 0 = *I'm Not Sure*, 1 = *Like Me*, 2 = *Really Like Me*)

^bUsed a 4-point Likert scale (1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Agree*, 4 = *Strongly Agree*)

PA-PSS included items which specifically probed campers' perception of support by parents, teachers, and friends. Campers' responses indicated that perception of parental support was highest, while support of friends was lowest (See Table 3).

Table 3. Number and Percentage of Campers Agreeing or Strongly Agreeing with Perceived PA Support of Parents, Teachers, and Friends

Relationship	<i>n</i>	%
Parents	313	64.0
Teachers	282	57.7
Friends	215	44.0

Campers reported a range of PA intentions for the two weeks following camp. The most frequently selected response was “5-9 days” (See Table 4).

Table 4. Number and Percentage of Campers' PAI for the Two Weeks Following Camp

Response	<i>n</i>	%
0 days	25	5.1
1-4 days	126	25.8
5-9 days	185	37.8
10-14 days	153	31.3

Research question two sought to determine if 4-H camp was a viable context for increasing campers' knowledge of PA guidelines. The mean score for PA-K at pretest was 49.9%, while the mean posttest score was 55.8%. There was a statistically significant increase in knowledge ($t_{488} = 4.086$; $p < .01$) of 5.9 points from pretest to posttest.

Research question three asked if a relationship existed between sex, grade, PA-EA, PA-PSS, and PAI. Results of Spearman's *rho* indicated a statistically significant relationship between PAI and sex ($r_s = -.103$; $p < .05$) and between PAI and grade ($r_s = .092$; $p < .05$). The negative correlation between PAI and sex indicated a relationship between being male and having a higher intention to be physically active in the two weeks following camp. The positive correlation between PAI and grade indicated an association between higher grade levels and a higher intention to be physically active in the two weeks following camp. Analysis revealed a statistically significant positive correlation between PA attitudes and PA intentions ($r_s = .129$; $p < .001$). Increases in PA attitude were correlated with increases in PA intentions. A statistically significant, positive relationship ($r_s = .227$; $p < .001$) was revealed, indicating increases in PA perception of the importance of social support were related to increases in PA intentions.

Research question four sought to determine if a statistically significant proportion of the variance in PAI was explained by the independent variables sex, grade, PA-EA, and PA-PSS. Ordinal regression analysis indicated good model fit, $X^2 (1069, N = 489) = 909.462$, $p = 1.000$, using a deviance criterion, Nagelkerke $R^2 = .11$, with a 95% confidence interval of .06 to .16 (Cohen, Cohen, West, & Aiken, 2003; Olkin & Finn, 1995; Soper, 2014). Contribution of individual predictors is shown in Table 5. PA-PSS was the only statistically significant predictor of PAI as indicated by the Wald criterion, $p < .001$.

Table 5. Logistic Regression Analysis of Physical Activity Intentions as a Function of Sex, Grade, PA-EA, and PA-PSS

Variable	B	Wald X ² -test	Odds Ratio	95% Confidence Interval for Odds Ratio	
				Lower	Upper
Male	.379	4.261	1.46	1.019	2.092
Grade 4 vs. Grade 6	-.378	2.779	.69	.439	1.069
Grade 5 vs. Grade 6	-.051	.059	.95	.627	1.440
PA-EA	.087	.490	1.09	.855	1.390
PA-PSS*	.783	27.714	2.19	1.635	2.929

**p* < .001

The test of parallel lines indicated that the data met the proportional odds assumption, $X^2(10, N = 489) = 10.743, p = .378$. Holding the other independent variables constant, a one-unit increase in the PA-PSS score improves the odds of higher PAI by 2.19 (or 119%). The change in mean differences in perception of social support and physical activity intentions shown in Table 6 illustrate this trend for PA-PSS to increase as PAI intentions increased.

Table 6. Perception of Social Support as a Function of PAI

	<i>n</i>	<i>M</i>	<i>SD</i>
0 days	25	2.21	.634
1-4 days	126	2.48	.649
5-9 days	185	2.77	.602
10-14 days	153	2.89	.621

While sex and grade did not explain a significant proportion of the variance of physical activity intentions, it was interesting to note that females tended to have lower physical activity intentions, as did 4th graders (See Table 7).

Table 7. Sex and Grade as a Function of PAI

	Physical Activity Intentions								Total	
	0 days		1-4 days		5-9 days		10-14 days			
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Sex										
Male	3	12.0	33	26.2	59	31.9	55	35.9	150	30.7
Female	22	88.0	93	73.8	126	68.1	98	64.1	339	69.3
Total	25	100.0	126	100.0	185	100.0	153	100.0	489	100.0
Grade										
4	12	48.0	46	36.5	57	30.8	40	26.1	155	31.7
5	10	40.0	55	43.7	75	40.5	75	49.0	215	44.0
6	3	12.0	25	19.8	53	28.6	38	24.8	119	24.3
Total	25	100.0	126	100.0	185	100.0	153	100.0	489	100.0

Discussion

The results of this study indicated that youth had a fairly neutral, though positive, attitude towards PA. For now, the research is still inconclusive about what aspect of PA attitudes should be targeted. One study suggested that programming directed at raising instrumental attitudes (i.e., viewing PA as useful) to extremely positive levels had great potential for changing youth PA behaviors, while another study found that changing affective behaviors had more influence on behavior (Rhodes & Courneya, 2005).

This study provides additional support for the Theory of Planned Behavior and the relationship between social support and changes in behavioral intentions. The role of parents in shaping PA behaviors is important. This study highlights adults, particularly parents, as the most important influencers of 4th-6th grade youth when it comes to physical activity behaviors. Friends, however, had much less impact. This finding is rather surprising since previous research suggested that subjective norms, or the influence of others, tended to have little influence on PA intentions (Rhodes & Courneya, 2005). "No man is an island" (Donne, 1975) is an apt phrase for illustrating the influence of parents, other caring adults, and peers and highlights the importance of an ecological approach to programming.

An overall examination of PA intentions suggests campers had a moderate to moderately high intention to be physically active in the two weeks following camp. Closer examination of the data revealed that males were more likely to have higher PAI than females. In this study, sex and grade were not significant predictors of PAI, yet the difference in male and female intentions is quite similar to a much earlier study by Trost and colleagues (1996) in which sex was a significant factor.

The link between PA intentions and behavior is still unclear. Youth intentions to continue to exercise were heavily skewed towards high PA levels. At least for the short-term, it appears that campers enjoyed the physical activities in which they were involved at camp and intended to continue to be physically active upon their return home.

This study suggests that summer camps may provide a viable context in which to increase youth knowledge about physical activity. The organized physical activities offered at camp provide a structure very similar to physical education classes in school, while free choice activities mimic the role of school-sponsored extracurricular activities. Thus, camp may serve as a bridge for the otherwise more sedentary summer months (Miller & Miller, 2011). Yet, it should be acknowledged that PA knowledge does not necessarily lead to PA behavior change (Tovar et al., 2010). Behavior change occurs as a result of a complex interaction among knowledge, attitudes, beliefs, and intentions (Lowe, Eves, & Carroll, 2002).

Implications

The age range of youth in this study raises the issue of unfelt need versus felt need. When youth are in a state of unfelt need, they do not know what it is that they need to know. Do youth have a felt need to be more physically active or to be more intentional in their activity? Can we expect that our programs will be successful if the children are in a place of “unfelt need”? These questions seem to point towards the necessity to design programs that help youth value PA and that build youths' intrinsic motivation towards PA so that they will choose to join structured PA programs or will build their own unstructured PA. As youth sit on the cusp of adolescence, they are facing a time when PA becomes less “cool,” and many youth become even more sedentary. Programs targeted at this age range may serve as the tipping point for more physically active adolescents and young adults.

In the present study, older youth were more likely to have higher PA intentions. Fourth graders had the lowest PAI. While the current findings should be interpreted with caution, these data suggest a need for additional research to determine if a primary focus on younger, female audiences is warranted, particularly given the need to best utilize limited camp program resources. Alternatively, programs that emphasize building relationships between younger youth or females and their more active, older counterparts may leverage the power of perceived social support in aiding youth to become more physically active.

A limitation of this study was a lack of follow-up to determine if youth did indeed sustain PA beyond summer camp. As programmers, our focus is often on what happens inside the program, yet consideration may be given to shifting attention to helping youth learn what to do after the program is over.

Conclusions

Obesity levels are reaching all-time highs in the United States. Programs which provide youth the chance to develop and sustain healthy habits, particularly during the more sedentary summer months, are critical to combatting the problem. Studies of typical program participants provide valuable information about attitudes and beliefs and pinpoint thresholds for targeted program development and delivery. This type of information helps program staff to maximize program resources, both by identifying the threshold at which optimal change occurs and by targeting the attitudes and beliefs which are most pivotal to behavior change.

The changes that program developers are asking youth to make are difficult. These changes often require sustained intentionality and high levels of felt need. Care should be exercised in giving the impression that change is easy, and sensitivity to the magnitude of dedication that is needed to achieve change is needed.

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