



# Factors Associated with Tweens' Intentions to Sustain Participation in an Innovative Community-Based Physical Activity Intervention

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## ABSTRACT

**Background:** Participation in free-time play, including individual and group activities, is important during youth as patterns of physical activity established then persist into adulthood. The VERB Summer Scorecard (VSS) intervention is an innovative physical activity promotion initiative that offers tweens (8-13 year-olds) opportunities to be active during the summer months when increased sedentariness can occur, leading to weight gain and a predisposition for further inactivity. **Purpose:** This study identified factors associated with intentions to participate in VSS among tweens previously exposed to the intervention. **Methods:** We conducted a cross-sectional study of 1,063 middle school youth using a 39-item survey and performed a multi-level analysis. **Results:** Being female (OR=1.43), having tried a new physical activity (OR=1.59), not currently participating in out-of-school activities but wanting to (OR=2.60), and self-monitoring of physical activity (OR=4.42 to 7.50) were associated with future intention to participate in VSS. **Discussion:** Adoption of the VSS seemed to inspire some tweens to initiate and sustain activity. VSS appealed to tween girls, an especially important priority audience because of the observed tendency of girls' physical activity to decline during the teen years. Moreover, VSS offered youth the opportunity for trying a variety of games, sports, and other activities. Additionally, the tangible practice of monitoring physical activity (via the scorecard) appeared to have a favorable impact on intention to participate again in VSS. **Translation to Health Education Practice:** Implications for school and community based physical activity interventions include structures that incorporate trialability and observability as mechanisms for increasing likelihood of intervention adoption.

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## BACKGROUND

Physical activity is essential for good health and proper growth and development among children and youth.<sup>1</sup> Numerous studies have correlated higher levels of physical activity with health benefits during youth, including weight control, improved cardiovascular fitness and muscular strength, and increased bone mass.<sup>1-8</sup> Physical activity also contributes to psychological well-being<sup>4,9,10</sup> and academic achievement.<sup>4,7,11-15</sup> Converse-

ly, physical inactivity is a leading modifiable risk factor for several chronic diseases and

results in many long-term consequences.<sup>4,16</sup> Physical inactivity is associated with over-

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weight and obesity, placing youth at greater risk for diabetes, hypertension, high cholesterol, asthma, arthritis, and overall poorer health status.<sup>1, 3, 5-7, 17, 18</sup> These relationships demonstrate the importance of increasing the proportion of children and youth who participate in regular physical activity.<sup>19</sup> Due to the importance of physical activity among youth, it has been established as one of the 10 Leading Health Indicators in *Healthy People 2010*.<sup>20</sup> Six *Healthy People 2010* focus area objectives have been established for physical activity among children and adolescents.<sup>20</sup> Unfortunately, there has been little progress in recent years toward increasing vigorous or moderately vigorous physical activity among adolescents.<sup>21</sup>

Youth ages 8 or 9 through 13 years of age (i.e., 3<sup>rd</sup> or 4<sup>th</sup> grade through 8<sup>th</sup> grade), often called tweens, straddle the “fence” between childhood and adolescence.<sup>22</sup> The tween years bring increased independence and reliance on peer support to make important lifestyle decisions, many of which affect their lives forever.<sup>23</sup> Tweens can be divided into two segments: *emerging* (ages 8-10) and *transitioning* (ages 11-13) to acknowledge important developmental and social changes,<sup>23</sup> e.g., transition from elementary to middle school.

Regarding physical activity, tweens have well-defined preferences and motivations for certain activities.<sup>22,24-26</sup> They enjoy activities that produce feelings of competence and success and result in increased self-esteem.<sup>25,26</sup> They prefer fun and entertaining activities that take place in comfortable, non-intimidating environments that include friends and peers.<sup>24,25</sup> Tweens’ opinions and attitudes toward physical activity vary by activity level and gender. For example, more active tweens prefer challenging activities and are often confident in their ability to excel.<sup>25</sup> Important gender differences in activity modes considered fun and rewarding also are important.<sup>24,25</sup> Thus, physical activity interventions should accommodate tweens’ needs and preferences by offering them a range of fun activities to do with their friends and opportunities to try new things.

In addition, recent objective measures of elementary, middle and high school students have reported that the greatest declines in both moderately vigorous physical activity and vigorous physical activity occur between grades 1-3 and 4-6, not during the teen years as previously thought.<sup>27</sup> Thus, it also is important to target interventions to emerging tweens (aged 8-10 years) to prevent the dramatic decline in physical activity after 3<sup>rd</sup> grade. Evidence also suggests that patterns of physical activity established in youth carry over into adulthood.<sup>6-9</sup> Other research indicates that youth who are physically active in their pre-teen years are more likely to maintain physical activity as teenagers.<sup>10,11</sup> Encouraging participation in leisure time play and in organized or structured activities is important during pre-adolescence and adolescence.<sup>6</sup> Therefore, the pre-teen period is a critical time for interventions to combat the physical activity decreases in the transition from childhood to adolescence, especially with girls, who typically exercise less than boys and show a greater decline in physical activity during adolescence.<sup>11-14</sup>

To reduce the effects of inactivity in children and youth, communities are seeking ways to increase physical activity for youth. However, data concerning the efficacy of community programs to increase physical activity are lacking.<sup>19,28</sup> Understanding the determinants of physical activity among children and youth is critical to the design of effective interventions.<sup>29-32</sup> Addressing the decline in physical activity among youth has become a priority for the Centers for Disease Control and Prevention (CDC). In 2002, the CDC launched the “*VERB™ It’s what you do*” program, a national media campaign to promote physical activity among youth 9 to 13 years of age.<sup>33,34</sup> *VERB™* was promoted through media advertising, public service announcements and special activity promotions. In schools, *VERB™* awareness was created through the *Weekly Reader*, *TIME for Kids*, *Channel One* and other materials.<sup>34</sup> Marketing firms assisted in developing and promoting this edgy, tween-centric campaign to popularize physical activity by making it cool and fun, an approach not unlike

ones that market other products to youth.

Whereas *VERB™* was both popular and widely known, it lacked mechanisms for guiding local implementation that further leveraged its brand recognition. With funding and technical assistance from one of the CDC-funded prevention research centers, a childhood obesity prevention coalition in Lexington, Kentucky designed the *VERB Summer Scorecard (VSS)* intervention in 2004. *VSS* is a community-based extension of *VERB™* and focuses on promoting physical activity to youth aged 9-13.<sup>34</sup> The actual “scorecard” is a “ticket to fun” for tweens that presents them with the possibility of free or reduced-priced admission to action-oriented games and sports such as taekwondo classes, swimming, bowling, skating, laser tag, tennis lessons, whiffle ball, dance aerobics, relay races, sack races and numerous other activities. Tweens track their at-home and community physical activity on the scorecard and redeem the card for enticing prizes. *VSS* offers tweens opportunities to be active in the community during the summer months because this time period may be fraught with an increase in sedentary activities, such as watching television, playing video games and using the computer all of which can lead to a decrease in physical activity and an increase in weight gain.<sup>35-37</sup>

Additionally, the *VSS* intervention focused on decreasing environmental barriers to physical activity. Through a social marketing approach, a *product* strategy positioned physical activity as a means of having fun with friends and trying new things. A *pricing* strategy attempted to make physical activity safe, inexpensive and free from embarrassment (values shared by the priority population). A *placement* strategy took advantage of the coalition’s ability to attract multiple and diverse “action outlets,” make them accessible to tweens, and encourage community partners to offer supportive information, goods and services. A *promotional* strategy involved use of a “scorecard” (Figure 1) as a device to monitor activity levels, provide participation incentives and to be a roadmap for the design of messages and selection of spokespersons and information channels for



reaching both tweens and parents.

In Lexington, the health department staff managed the logistics of scorecard distribution to schools and the recruitment of VSS activity sponsors, prize donations and oversight for the promotion. 14 businesses and 12 community groups became VSS sponsors, with each one offering a subset of the aforementioned action-oriented events. At one event, 18 organizations sponsored activities for tweens, attracting over 950 youth who participated in outdoor games.

The public school system also served a pivotal role in promoting the intervention. In cooperation with the health department, school nurses delivered the scorecards to the schools, where physical education teachers distributed them and encouraged their students to participate.

PURPOSE

The purpose of this study was to explore factors associated with the intention of middle school youth to participate in the community-based physical activity intervention -- VERB Summer Scorecard (VSS). Specifically, this study identified factors associated with future intention to participate in VSS among tweens previously exposed to the intervention.

METHODS

Participants and Procedures

Data from the Lexington VSS middle school spring 2006 survey were used for this study. The dataset contains 2,623 middle school student responses. The Lexington-Fayette County Health Department and the obesity prevention coalition were responsible for administration of the survey with cooperation and approval of the school district. Whereas the timing of survey administration was at each school's discretion, the majority of surveys were completed during May 8-19, 2006. Teachers received a \$10 gift card as an incentive to have their classes participate in the survey.

Instrument

The researchers developed a 39-item survey. Survey items included ones derived from the CDC's Youth Risk Behavior Survey<sup>38</sup> and Youth Media Campaign Longitudinal Survey.<sup>39</sup> Although not explicitly tested in this study, constructs of the Theory of Reasoned Action (TRA)<sup>40-42</sup> also guided survey item development. The TRA suggests that the most important predictor of behavioral adoption is intention to perform the behavior, which has both attitudinal and subjective norm components. That is, a person who has

a positive attitude toward the behavior and is motivated to comply with positive normative beliefs will have a greater intention to perform the behavior, and in turn, be more likely to perform the behavior.<sup>43</sup>

The dependent dichotomous variable measured intention to participate in the subsequent year's VSS intervention. Students were asked if they completed a scorecard in the previous year's VSS initiative, and about their intention to fill one out again in the upcoming summer. They were asked this question only if they indicated they had previously "seen, read, or heard anything about the VSS program."

The independent variables included 14 measures of attitudes, beliefs and perceptions of parental support. The attitudes and beliefs were coded on a Likert-type scale from "1" (Strongly disagree) to "4" (Strongly agree). Some of the attitude/belief variables were reverse-coded so that for all variables, a value of "4" represented the most positive response. The parental support variables were measured with "yes," "no," and "do not recall" response options. For these items, response values of "do not recall" were re-coded to "no."

A factor analysis using principal component analysis and a promax rotation method

Figure 1. The VERB Summer Scorecard used in Lexington, Kentucky

**Great Prizes... Great Deals**  
Your Ticket to Fun for 9-13 Year Olds  
**Summer Scorecard**  
June 1 - August 10, 2004  
www.VERBSummerscorecard.com

**Prizes**  
Complete Scorecard to earn Prize Drawings

- \$250 gift certificate/Dick's Sporting Goods
- Bike and helmet/Wal-Mart
- Family membership to YMCA (6 months)
- Year of classes, Bruce Cheering's Taekwondo Academy
- Jr. membership & racquet at Lexington Tennis Club (1 year)
- \$25 YMCA gift certificate
- The Stadium Party for 6
- Laaser Quest Party for 6
- Champs Birthday Package
- Inflatable Jump rental from Astro Events
- 5 Family Pack Passes to Colliers and Cosmic Bowling
- Alps Mountaineering, Monarch Pass sleeping bag
- Lexington Gymnastics and Cheerleading Party for 12
- Scorecard Start Class, Kentucky Indoor Soccer & Sports
- 4 Family Memberships/Lexington Children's Museum
- Student t-shirts, uniforms, Knappe for Kids
- Gift certificates from Iale of You, J&H Lan-Mark Store, Lexington Gymnastics & Cheerleading

Everyone who completes the Scorecard will win: VERB drawing sports bag, water bottle and biking disc as well as other coupons. Guard your card with your life. You must have the completed Scorecard to pick up prizes and for prize drawings.

**Great Deals**  
With VERB Summer Scorecard

You MUST bring your card to get the discounts!!!

- Coffee & Cosmic Bowling Lane: First game FREE in June, July and August. 252-5425, 277-4748
- Extreme Force Martial Arts: 1/2 price for first month of class. 221-3061
- Brian Cheering's Taekwondo: FREE 6-week beginner class. 222-2942
- 1/2 on Third Basketball, Cheerleading & All Sports Camps, Century United Methodist Church: \$10 off camp registration. 269-3000, x232
- Kente for Kids: \$194 savings and more in Basic Course or 1 month FREE with purchase of uniform (new members). 275-2425
- Kid's Place: Two for the price of one all summer. 272-5423
- Laaser Quest: \$1 off regular game price Friday, Saturday & Sunday; \$2 off regular game price Monday-Thursday. 225-1742
- Lexington Gymnastics & Cheerleading: \$5 off open gym (9 am-6 pm M-F). 272-5880
- Lexington Ice & Recreation Center: Buy 1, get 1 FREE for skating or mini-hockey (Sunday-Tuesday). 259-5951
- Blue Balance Lexington: 10% off any non-sale item for student and accompanying adult. 259-2513
- The Studios: Buy 1, get 1 FREE game of bowling, laser tag or rock wall climb. Monday-Friday, 11 am-9 pm. All games must be put on scoring card or must buy new one). 259-6549

Don't forget to get your card stamped!

**Fun Things to Do**  
at Home with Summer Scorecard!

- Play some hoops
- Hula Hoop
- Jump rope
- Play frisbee
- Swing on a swing
- Ride a bike
- Skate - inline or board
- Swim
- Take a walk
- Circle a ball around the block
- Turn on the radio & dance
- Bounce a ball against a wall
- Make up fun, active games with friends and family

Check out VERBshow.com for "how to" videos and more fun things to do.

**Double Time Any Time**  
Take two VERBS, make one game...and go. Stickers: Use a hockey stick and a soccer ball to make your own game.

**VERB Summer Scorecard**  
Get your Scorecard stamped each time you do an activity at any Scorecard site. You can get your card stamped at the same place over and over. Or, mix it up and try different places.

Swim	Bowl
Climb	Drabble
Run	Skate
Bike	Jump

Parents can initial one of your squares each time you play an hour on up to 12 squares. If all 24 squares are stamped or initialed by August 10, you're eligible for prizes.



with Kaiser normalization was conducted with the 14 measures of attitudes, beliefs and perceptions of parental support. Based on eigenvalues  $\geq 1.0$  and a scree plot, three factors were extracted. Cronbach's alpha was used to determine the internal consistency reliability of each factor. The continuous level variables included *benefits to physical activity* ( $\alpha=.772$ ) consisting of seven items (scores ranging from 7 to 28) with factor loadings ranging from .550 to .669; *parental support to engage in physical activity* ( $\alpha=.596$ ) consisting of five items (scores ranging from 0 to 5) with factor loadings ranging from .520 to .704; and *barriers to physical activity* ( $\alpha=.636$ ) consisting of three items (scores ranging from 3 to 12) with factor loadings ranging from .631 to .713.

Four variables were included in the analysis as individual items either because they did not load on a factor or because the factor they created had a weak internal consistency:

- There are lots of places near where I live where I can do physical activities.
- There are many ways to play sports without signing up or being on a team.
- I can get to the places where I like to do physical activity.
- Kids my age think that doing physical activities is fun.

Control variables included measures of age, gender and exposure to the VERB™ national campaign. Three measures of physical activity were included:

- Think about the last week, how many days of the week did you play outside or play a sport, not including PE? (scores ranging from 0 to 7)
- Last weekend, how many times did you do sports, dance, or play games in which you were very active? (scores ranging from 0 to  $\geq 6$ )
- In the last two months, did you try a new sport, game or other fun activity that you have never done before? (yes/no response variable)

To examine relationships between out-of-school activity level and intention to participate, students were asked to describe

themselves by choosing one of five options:

- I do 2 or more activities out of school that I really like doing.
- I do 1 activity out of school that I really like doing.
- I do at least 1 activity out of school, but I haven't found one that I really like doing.
- I don't do any activities out of school, but I would like to.
- I don't do any activities out of school, and I don't really want to.

This segmentation variable was dummy-coded for inclusion in multivariate models. The response option "I don't do any activities out of school, and I don't really want to" served as the reference group.

A measure of participation in the 2005 VSS initiative also was used. Respondents were asked how much of a scorecard they completed with response options of:

- I did not get a VERB Summer Scorecard.
- I got a VERB Summer Scorecard but did not fill it out.
- I filled out part of a VERB Summer Scorecard.
- I completely filled out one VERB Summer Scorecard.
- I filled out more than one VERB Summer Scorecard.

### Data Analysis

SPSS version 15.0 for Windows<sup>44</sup> was used for univariate and bivariate data analysis. Univariate analysis included frequencies, means, standard deviations, skewness and kurtosis for each variable. Bivariate associations between intention to participate in a future VSS program and other variables were examined using chi-square tests for categorical variables and independent samples *t*-tests for interval level variables. Diagnostics were run using a tolerance of 0.1 or less as significant levels of collinearity.

Multilevel modeling was used to confirm relationships identified at the bivariate level. Multilevel modeling was used because students (Level-1) were nested within schools (Level-2). Level-1 and Level-2 predictors were used. The outcome variable was inten-

tion to participate in the forthcoming VSS initiative in year two of its offering, i.e., 2006. The model was estimated using penalized quasi-likelihood estimation (PQL) and was conducted using HLM version 6. The Bernoulli distribution at Level-1 was used because the outcome variable was dichotomous. Adjusted odds ratios were calculated along with 95% confidence intervals. The assumptions of logistic regression were considered, such as model specificity, mutually exclusive and collectively exhaustive categories, and a minimum of 50 cases per predictor variable.<sup>45</sup> For the HLM analysis, the variable – *I did not get a VERB Summer Scorecard* – was dummy-coded as the reference group. Cohen's "rule-of-thumb" for interpreting effect sizes was used to determine meaningful relationships (i.e., small OR=1.50, medium OR=2.50, large OR=4.30).

### Institutional Review and Approval

All methods and protocols were submitted to the institutional review board (IRB) of the collaborating university. The IRB approved the study following an expedited review.

## RESULTS

### Demographics

The final sample for the study included 1,063 cases from eight public schools in Lexington, Kentucky (Table 1). Almost all participating youth had heard of the VERB™ program (96.4%). There were no statistically significant differences with respect to school size, race/ethnicity and proportion of students eligible for free or reduced price lunch. As Table 1 shows, the average age of participants was  $12.69 \pm 0.97$  years. Approximately 53.4% of participants were girls. Because the dependent variable, intention to participate again in the VSS initiative, was part of a skip pattern, only cases that involved the skip pattern were included in the analysis. Cases missing data on any of the variables were excluded from study.

### Comparison of Future Intenders and Non-intenders

Independent samples *t*-tests revealed several significant differences between those

**Table 1. Demographic Characteristics of Study Participants**

Variable	N (Percent)
<b>Schools</b>	
A	304 (28.6)
B	281 (26.4)
C	146 (13.7)
D	102 (9.6)
E	27 (2.5)
F	20 (1.9)
G	139 (13.1)
H	44 (4.1)
<b>Sex</b>	
Male	495 (46.6)
Female	568 (53.4)
Age (years)	M ± SD 12.69 ± 0.97

who intended to participate in a *VERB Summer Scorecard* intervention again and those who did not. Intenders were younger ( $P=0.015$ ), played outside on more days ( $P<0.001$ ), and performed more activities the previous weekend ( $P=0.003$ ) compared to non-intenders. Additionally, compared to non-intenders, intenders were more likely to report about local venues where they could be active ( $P<0.001$ ), indicate the ability to get to places where they like to be active ( $P<0.001$ ), identify benefits of being physically active ( $P<0.001$ ), indicate fewer barriers to participating in physical activity ( $P=0.018$ ) and report more parental support for being physically active ( $P<0.001$ ) (Table 2). There were no significant differences in whether kids perceived physical activity to be fun for others their age ( $t[1061] = -1.53, P=0.127$ ) or whether they believed there were ways to be active without being on a team ( $t[1061] = -1.50, P=0.135$ ).

A multilevel analysis suggested four variables were predictive of being a *VERB Summer Scorecard* future intender. As Table 3 shows, these variables included gender, having tried a new type of physical activity, not currently participating in out-of-school activities, and previous level of participation in VSS. More specifically, girls were 1.43

times more likely than boys to be intenders ( $P=0.018$ ). Compared to youth who had not tried a new physical activity, youth who had tried a new physical activity were 1.59 times more likely to be VSS intenders ( $P=0.003$ ). Youth who were not participating in any activities outside of school but would like to be were 2.60 times more likely to report being intenders ( $P=0.035$ ). In addition, past participation in VSS assessed via completion of self-monitoring tool (i.e. the scorecard) demonstrated a dose-response relationship with future intention to participate in VSS. As the data in Table 3 indicate, strength of previous participation increased the odds of being a future intender (with ORs ranging from 4.42 to 7.50;  $P<0.001$ ). Other statistically significant variables included frequency of physical activity (OR=1.12;  $P=0.007$ ) and benefits of physical activity (OR=1.06;  $P=0.030$ ). However, the effect size for both of these variables was so small that it would be imprudent to try to assign practical significance to them.

## DISCUSSION

The intervention used in this study (VSS) was introduced to capitalize on the dissemination and popularity of a branded physical activity program “*VERB™ it’s what you do*” by offering a locally tailored extension of it. Availability of a community-based VSS program may extend the reach of national campaigns, further encouraging some tweens to initiate and sustain physical activity. *VERB™* researchers found that 74% of the tweens they surveyed had heard of the brand.<sup>46</sup> In the present research, this figure increased to >96%. Having the intervention be community-based expands the network of people, institutions and agencies in a position to take responsibility for, and ownership of the program, and potentially increases community capacity in ways that contribute to its being sustained over time.<sup>47</sup>

Constructs of the theory of reasoned action were useful in providing a framework upon which to base survey items related to attitudes about physical activity and perceived normative beliefs concerning friends, age peers, and parents. Whereas the

theory itself was not tested, selected elements had utility in making interpretations that separated VSS future intenders and non-intenders.

This study offers three main findings pertaining to this community-based physical activity intervention. First, although the magnitude was modest (OR=1.43), girls were more likely than boys to identify themselves as future intenders to participate in VSS. The possible unique appeal of VSS to tween girls may be especially important. Creating activities that address gender-related determinants may, in turn, address gender-specific physical activity disparities. Girls entering adolescence should be a priority audience for innovative physical activity promotion programs because of the observed tendency of girls’ physical activity to decline during the teen years,<sup>11-14,48</sup> thereby, decreasing the likelihood of obtaining all of the physical, mental and academic benefits associated with physical activity participation, as well as predisposing them to increased risk of health problems such as bone demineralization and osteoporosis.<sup>49</sup> Bone health in adolescence is important because the amount of mineralized bone established during the teen years approximates the amount lost during the entire remainder of adulthood.<sup>50</sup> Bone loss among women by age 30 to 35 can be a serious compromise to their health, further demonstrating the value of interventions that reduce or delay decline in physical activity.<sup>49</sup>

Second, the VSS intervention also offered youth opportunity for trying a variety of new activities. According to Rogers:<sup>51</sup> (p. 258) “The personal trying out of an innovation (i.e., trialability) is one way for an individual to give meaning to an innovation and to find out how it works under one’s own conditions. A personal trial can dispel uncertainty about a new idea.” In the present research, getting youth to try new things and complete *even a portion of a scorecard* substantially increased future intentions to participate in VSS, perhaps enriching a commitment to being physically active. As previously indicated, level of participation (monitored via the scorecard) yielded a dose-response



Table 2. Psychosocial Characteristics of Study Participants

	VSS Intenders n=668 (62.8%)	VSS Non-intenders n=395 (37.2%)
Variable	M ± sd	M ± sd
Places to be active in neighborhood	3.39 ± 0.899	3.21 ± 0.943
Kids think it is fun to be active	3.22 ± 0.826	3.14 ± 0.816
Can be active without joining a team	3.58 ± 0.736	3.51 ± 0.782
Can get to places to be physically active	3.50 ± 0.768	3.28 ± 0.887
Benefits of physical activity	23.13 ± 3.456	21.84 ± 4.208
Barriers to physical activity	9.46 ± 2.255	9.12 ± 2.262
Parental support for physical activity	2.70 ± 1.521	2.27 ± 1.474
Frequency of PA, not including PE	4.69 ± 2.035	4.01 ± 2.229
Frequency of weekend play	3.65 ± 1.750	3.30 ± 1.885
Variable	N(%)	N(%)
Heard of VERB <sup>TM</sup>	650 (97.3)	375 (94.9)
Tried a new activity	451 (67.5)	207 (52.4)
Do 2 or more activities outside of school that really like doing <sup>a</sup>	425 (63.6)	213 (53.9)
Do 1 activity outside of school that really like doing. <sup>a</sup>	142 (21.3)	97 (24.6)
Do at least 1 activity outside of school but haven't found one that I really like doing. <sup>a</sup>	34 (5.1)	27 (6.8)
No activities outside of school but would like to. <sup>a</sup>	53 (7.9)	30 (7.6)
Got a VSS but did not fill it out. <sup>b</sup>	99 (14.8)	134 (33.9)
Filled out part of a VSS. <sup>b</sup>	151 (22.6)	32 (8.1)
Completely filled out one VSS. <sup>b</sup>	125 (18.7)	19 (4.8)
Filled out more than one VSS. <sup>b</sup>	76 (11.4)	8 (2.0)

<sup>a</sup>Not doing any activities out of school and not wanting to be active is the reference category.  
<sup>b</sup>Not getting a VSS is the reference category.

effect in terms of future intentions, with odds ratios ranging from 4.42 (at least part of one scorecard completed) to 7.50 (more than one scorecard completed).

VSS may have inspired persons to be intenders if they were not currently active out-of-school but desired to become active (OR=2.60). Thus, modifying the social and environmental conditions so as to make physical activity accessible, fun, easy, and popular, and not heavily reliant on skills, may draw out youth who are shy, uncertain about their athletic talents, or are otherwise hesitant to try new things.

Third, results of the current study revealed that self-monitoring of physical

activity (OR=4.42 to 7.50) was associated with future intention to participate in VSS. These results support the use of motivational tools, a key aspect of multi-level physical activity programs.<sup>52</sup> In this study, the scorecard self-monitoring tool appeared to motivate tweens to be physically active by: (1) providing access to physical activity venues, and (2) monitoring physical activity for prize eligibility.

Increasing the proportion of youth that meet recommended physical activity guidelines is beneficial to overall health. Sustained physical activity among youth favorably influences the development and maintenance of healthy bones and joints,

the control of weight, the establishment of muscle, the reduction of fat, and protects against hypertension.<sup>2</sup> For youth, physical activity also has been found to correlate with less negative affect and less risk of thoughts about suicide.<sup>53</sup>

In interpreting findings, the limitations of the study need to be considered. First, causality cannot be inferred due to the study's cross-sectional design.

Second, physical activity was assessed via self-report data and may not reflect actual physical activity frequency accurately. Despite these limitations, the study also has notable strengths as well. A particular strength was the development and pilot





**Table 3. Variables Associated with Intention to Continue Participation in VSS**

Variable	Coefficient	P-value	SE	Odds Ratio	95% CI
Sex <sup>a</sup>	0.357	0.018	0.150	1.43	1.064, 1.917
Age	-0.101	0.182	0.076	0.90	0.779, 1.048
Frequency of physical activity – not including physical education	0.115	0.007	0.043	1.12	1.032, 1.221
Frequency of weekend play	-0.075	0.121	0.049	0.93	0.843, 1.020
Try a new activity <sup>b</sup>	0.466	0.003	0.154	1.59	1.179, 2.156
VERB™ exposure <sup>c</sup>	0.545	0.147	0.376	1.73	0.826, 3.604
Places to be active in the neighborhood <sup>d</sup>	-0.079	0.383	0.090	0.92	0.774, 1.103
Kids think it is fun to be active <sup>d</sup>	-0.090	0.352	0.096	0.91	0.757, 1.104
Can be active without joining a team <sup>d</sup>	-0.025	0.813	0.107	0.97	0.790, 1.203
Can get to places to be physically active <sup>d</sup>	0.146	0.150	0.101	1.16	0.949, 1.412
Benefits of physical activity <sup>e</sup>	0.055	0.030	0.026	1.06	1.005, 1.111
Barriers to physical activity <sup>f</sup>	-0.003	0.926	0.035	1.00	0.930, 1.068
Parental support for physical activity <sup>g</sup>	0.083	0.121	0.054	1.09	0.978, 1.209
Do 2 or more activities outside of school that really like doing <sup>h</sup>	0.647	0.103	0.397	1.91	0.877, 4.156
Do 1 activity outside of school that really like doing <sup>h</sup>	0.718	0.076	0.405	2.05	0.927, 4.541
Do at least 1 activity outside of school but haven't found one that I really like doing <sup>h</sup>	0.820	0.084	0.474	2.27	0.896, 5.751
No activities outside of school but would like to <sup>h</sup>	0.96	0.035	0.454	2.60	1.070, 6.338
Got a VSS but did not fill it out <sup>i</sup>	-0.335	0.061	0.179	0.72	0.504, 1.016
Filled out part of a VSS	1.487	0.000	0.229	4.42	2.825, 6.923
Completely filled out one VSS	1.728	0.000	0.272	5.63	3.303, 9.588
Filled out more than one VSS	2.015	0.000	0.386	7.50	3.522, 15.967

<sup>a</sup>Boy is the reference category.  
<sup>b</sup>Have not tried a new activity is the reference category.  
<sup>c</sup>No VERB™ exposure is the reference category.  
<sup>d</sup>Response scales goes from '1' (really disagree) to '4' (really agree).  
<sup>e</sup>Response scale is coded to where a low valued refers to few benefits, and a high value refers to many benefits.  
<sup>f</sup>Response scale is coded to where a low value refers to many barriers, and a high value refers to few benefits.  
<sup>g</sup>Response scale is coded to where a low value represents low parental support, and a high value refers to high parental support.  
<sup>h</sup>Not doing any activities out of school and not wanting to be active is the reference category.  
<sup>i</sup>Not getting a VSS is the reference category.

testing of a locally tailored intervention (VSS) to augment a conceptually strong national media campaign (VERB™) derived from extensive formative research. Second, the intervention was community-based and included the collective efforts of a coalition comprised of persons representing the school district, the health department, the YMCA, Department of Parks and Recreation, various other youth-

oriented agencies, and several businesses and local vendors.

Third, the intervention demonstrated appeal to youth, especially to girls, offering a mechanism for counteracting a secular trend toward increased sedentariness beginning in the pre-teen and early teen years. Future research may assess initial interventional adoption in addition to future behavioral intention.

**TRANSLATION TO HEALTH EDUCATION PRACTICE**

Implications for community-based physical activity interventions include structures that incorporate aspects of trialability and observability as mechanisms for increasing likelihood of adoption. “Trialability is the degree to which an innovation can be experimented with on a limited basis... The trialability of an innovation, as perceived by



the members of a social system, is positively related to its rate of adoption. If an innovation can be designed so as to be tried more easily, it will have a more rapid rate of adoption.<sup>251 (p. 258)</sup> In the present study, the scorecard served as a facilitation tool and as an entrée for youth to try new sports, games, and other activities, with the cooperation of local vendors.

“Observability is the degree to which the results of an innovation are visible to others...The observability of an innovation, as perceived by the members of a social system, is positively related to its rate of adoption.<sup>251 (p. 258)</sup> In the current research, evidence of observability was seen. As VSS participation level increased, so did intention to be a VSS participant in the subsequent year. The scorecard itself, as an “observable feature” of the intervention, may have served as visible cue for youth.

Given the lack of progress toward meeting physical activity objectives for adolescents,<sup>21</sup> it is incumbent upon schools and communities to seek innovative strategies for increasing physical activity among youth. Multilevel physical activity interventions may be more effective in establishing and sustaining health-enhancing behaviors than interventions with a more limited individual level focus.<sup>54</sup> VSS is consistent with a socio-ecological framework by addressing individual, interpersonal, organizational, community and policy level factors simultaneously.<sup>55,56</sup> This study adds to the requisite knowledge about the efficacy of community-based interventions for increasing physical activity among youth<sup>19,28</sup> and increases understanding of the correlates of youth intentions to be physically active, thereby contributing to improvement in the design of strategies for this population.<sup>29-32</sup>

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