Free Time Motivation and Physical Activity in Middle School Children

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Abstract

This study examined free time motivation and physical activity in 68 middle school children from a rural public school system (N = 24) and a private school located in the same area of the Midwest (N = 44). Results indicated that free time motivation did not explain variability in physical activity behavior during free time or while students were in school (p > .01). A school (private vs. public) x gender comparison indicated that males had higher activity levels than females during free time and while in school, F(1, 67) = 8.43, p < .01, Eta2 = .12 and F(1, 67) = 27.59 , p < .01, Eta2 = .30. There were no differences between public versus private school participants (p > .05) on free time minutes of MVPA. Males from the study participated in 56 minutes per day while wearing activity monitors, approximating the 60 minutes recommended by health experts, t = -1.028, p > .05, n = 30. Female values were significantly below this Department of Health and Human Services recommendation at 32 minutes per day, t = -7.31, p < .01, n = 38.

Inactivity is a major public health concern for adults around the world (Vincent, Pangrazi, Raustorp, Tompson, & Cuddihy, 2003). These concerns are equally valid for adolescent age children. Factors such as motivation are believed influential in predicting which individuals will choose physical activity over other more sedentary pursuits based on levels of enjoyment and perceived benefits that result from movement experiences (Deci & Ryan, 1985; Ellis, 1973; Vallerand, 2001). The purpose of this study was to examine free time motivation and physical activity scores from two groups of middle school children. These include a group of children from a small rural public school district and a private school located in the same Midwestern area.

Physical Activity

Research on physical activity determinants are a focal point of many studies over the past decade. Much of this research yielded low explained variance with evidence that age, sex, and even cultural influences exist (Sallis, Prochaska, & Taylor, 2000; Trost, Owen, Bauman, Sallis, & Brown, 2002; Yan & McCullah, 2004). Age and sex are both predictors of physical activity during school age years. This begins long before adolescence based on Campbell and Eaton (2000) who note that infant males tend to be more active and engage in higher amounts of vigorous physical activity than their female counter parts. This continues on into the middle school years and is marked by a tendency for females to report more sedentary activities (Harrell, Pearce, Markland, Wilson, Bradley, & McMurray, 2003). In summary, age -related declines are noted in both males and females during childhood, adolescence, and early adulthood (Thompson, Baxter-Jones, Mirwald, & Bailey, 2003).

What influences physical activity is speculative and in many cases highly individual. Many factors are potential influences to an individual's decision to engage in physical activity (Kozub & Frey, 2006). What is supported in the physical activity literature is that children's interest in physical activity begins at a young age (Chen & Zhu, 2005). Further, physical activity is an important part of a healthy lifestyle for all humans. And, specifically, children are recommended to engage in 60 minutes of moderate to vigorous physical activity (MVPA) on most days (Department of

Health and Human Services, 2008).

Free Time Motivation

There are many possible explanations for why individuals choose to participate in exercise during free time. Some researchers have proposed that the choice to exercise is explained by a model of intrinsic motivation (Deci & Ryan, 1985). Models suggest that multiple types of extrinsic motivation exist on a continuum (from "non self-determined" to "most self-determined") (Baldwin & Caldwell, 2003; Deci & Ryan, 1985). Within this continuum participants engage in activities because of parental expectations (external regulation) or because they are seeking validation from friends or trophies from winning (introjected regulation) (Baldwin & Caldwell, 2003). Next, identified regulation is a form of extrinsic motivation closer to self-determined behavior. This includes when a person engages in an activity for reasons that are personally important (Baldwin & Caldwell, 2003; Vallerand, 2001). Finally, intrinsic motivation is where an individual participates in activities for the sake of personal interest or enjoyment; and this is considered to be the most autonomous (Ryan & Deci, 2000; Vallerand, 2001).

Amotivation is considered the least desirable from a self-determination standpoint. If a person engages in activities for no apparent reason or is uninterested in physical activity, this lack of motivation should predict inactivity (Vallerand, 2001). Amotivation is a specific subscale in the free time motivation measure developed by Baldwin and Caldwell (2003) and had the lowest mean values in their study of psychometric properties of a scale developed to study middle school children. Adolescence may be a time when amotivation to participate in free time activities is rare. However, for adults exercise has been found to be inversely related to amotivation and related positively to intrinsic factors (Alexandris, Tsorbatzoudis, & Grouios, 2002). Data from adolescent age children is needed to confirm if these relationships between motivation and exercise are also found outside of adult groups.

Research questions from the current study include determining if free time motivation predicted physical activity during free time for middle school children. Second, physical activity levels over a four-day period (two weekdays and two weekend days) were studied to determine if children in middle school were getting the recommended minutes of MVPA. It was hypothesized that males would be more active than females during middle school from this age matched sample (Sallis et al., 1992; Thompson et al., 2003). Finally, physical activity levels in children from the private school would be higher than children from the rural public middle school based on findings of Ross (2000) who cited location as a factor in physical activity behavior where rural areas offer less opportunity.

Methods

Participants

The research was approved by institutional review boards and resulted in 78 children returning parental consents. Following data collection, a decision was made to delete ten cases, resulting in 38 females and 30 males from a rural Midwest area who followed study protocol and wore the activity monitor for adequate periods of time (two weekdays and two weekend days). Ten potential participants who consented for the study were deleted from the data file for one of three reasons. First, the activity monitor failed to register. Second, the participant lost his or her monitor. And finally, six children were eliminated from the study because they failed to wear the monitor enough to insure that at least one weekday and one weekend day could be studied. Some students failed to wear monitors for short periods of time due to sports or aquatics, but this was deemed acceptable when missing data could be estimated from a post study questionnaire. Participants ranged in age from 11 to 15 years with a mean age of 12 years and 1 month. The sample included sixth, seventh, and eight grade

children from two school systems. The majority of the sample included younger middle school children with only two adolescents older than 13 taking part in the study.

The two school districts, used for data collection, included a rural public school district (n = 24) and a small city parochial school (n = 44). Ethnicity and race demographics included 90% white, and the remaining ten percent included two Asian, three Biracial, and one participant who indicated other race/ethnicity category. One final study demographic important in the current data collection is body mass indexes (BMI) for the sample. Students from the two schools ranged in BMI from 14 to 39. The mean BMI for males in the sample was 19.37 (SD = 4.33) and for females the mean was similar at 19.05 (SD = 3.33) indicating that the majority of the participants were within the healthy zone for body composition (Winnick & Short, 1999).

Procedures

Instrumentation. Three data collection instruments were used. These included Actigraph uniaxial activity monitors to determine minutes of MVPA, Baldwin and Caldwell's (2003) *Free Time Motivation Scale* (*FTMS-A*), and a post study questionnaire developed for this study. Actigraph monitors and other similar devices have been used successfully to measure physical activity counts in children and adolescents. Specifically, ActiGraph monitors have been found to be reliable in many research settings (Welk, Schaben, & Morrow, 2004). Actigraph software was used to estimate minutes of MVPA based on a combination of Work Energy Theorem and Freedson Equation. The reader is referred to the manufacture's manual for more information on this calculation for Actigraph monitors (Active Life Style Monitoring System, 2005).

Baldwin and Caldwell (2003) developed the *FTMS-A* using the constructs of self-determination theory (Ryan & Deci, 2000). This scale included five subscales representing amotivation (participant not knowing why he or she engages in activities), external regulation (participation to avoid negative consequences), introjected regulation (social reasons to maintain some perceived status), identified regulation (to gain knowledge or skills), and intrinsic motivation (related to pleasure). Baldwin and Caldwell (2003) demonstrated estimates of reliability and validity for adolescents between the ages of 12-15 for the *FTMS-A*. These authors report reliability values for the five subscales ranging from .67-.72 using Cronbach's alpha. Further, the hypothesized subscales of introjected regulation (5 items), external regulation (5 items), amotivation (4 items), identified regulation (4 items), and intrinsic motivation (3 items) emerged in a five factor solution providing evidence of construct validity for the 20-item scale (Baldwin & Caldwell, 2003). The Likert scaling for each of the twenty items includes five choices ranging from strongly disagrees to strongly agree. Although, no undecided choice is identified in the scaling, there is a middle choice of "3" indicating a level of agreement and disagreement with the item statement.

One additional data collection tool was developed for the current study to determine the extent that children complied with investigator requests to wear the monitor and estimate additional physical activity minutes at the MVPA level. This included questions related to when and during what activities the monitors were worn. Investigators also asked children to specify when they did not wear the monitor and to provide times and activities to assist in estimating missing minutes of MVPA. When participants indicated that they failed to wear the monitor for a short period of time, the investigator added minutes of MVPA based on the information found in Ainsworth et al. (1993). Further, information from this compliance questionnaire was checked with the figurative displays from each participant to insure accuracy of when children indicated they wore or failed to wear monitors. This data triangulation helped avoid situations where child recall error resulted in either mistakenly adding

counts or failing to account for lost data.

Data collection. Data collection began by handing out the questionnaire and collecting *FTMS-A* scores. For the public school children this occurred during health class and was coordinated with a unit on physical activity and well being. For the private school children physical education class was used as the site for filling out the questionnaire and handing out activity monitors. Investigators had no control over when and at what one time of the school year data could be collected at sites. This resulted in two schools offering different class settings (health or physical education) for data collection. This was a limitation in the study since the public school children did not have physical education during the school day and the private school children did have this opportunity to engage in physical activity. All children were engaged in a non structured recess period during the middle of the school day.

Participants were given space to independently fill out the *FTMS-A* scale and were not allowed to interact during this part of the study. Monitors were handed out after the questionnaire was filled out (either on a Tuesday or Wednesday); and then returned after the weekend, usually on Monday and in some cases Tuesday, if students forgot their monitors at home. Data were collected in the two schools over a five-month period from October to February. Most of these data were collected in late fall or winter. The Midwestern location of these data collection sites included colder temperatures with very little snowfall. Each student included in this study was asked to fill out a final questionnaire indicating when they either forgot to wear the monitor or were forced to remove monitors for organized sports or swimming. Again this was done individually so that students did not consult peers when responding to questions about their compliance to study protocol.

Data Analyses

Frequency counts and other descriptive statistics were used to analyze quantitative data from Actigraph activity monitors and *FTMS-A* scores. Physical activity was assessed using minutes at moderate to vigorous levels during school hours and during free time. Free time was defined as any minutes outside of school that occurred either before school, after dismissal, and during weekends. Extracurricular sports were considered free time physical activity since children had the choice to participate or not. Pearson correlations were run on key variables to determine if relationships existed between general *FTMS-A* scores, age, and minutes of moderate to vigorous physical activity (MVPA) during school and free time. Further, a multivariate analysis of variance (MANOVA) was used to determine if school affiliation resulted in mean differences in physical activity and motivational values. Gender effects and interactions were also studied using MANOVA. In all cases, an alpha value of $p < .05$ was used in these multivariate techniques as the criterion cut off for significance of findings. Finally, one sample *t* tests were run on groups to determine if the MVPA values in the current sample differed from the 60 minutes on most days recommended for children (Department of Health and Human Services, 2008).

Results

Free Time Motivation Scores and Physical Activity Counts

Free time motivation scores are found in Table 1 for each group from the five subscales. Most participants had the highest mean values for intrinsic motivation. This was followed by scores that varied for each of the four remaining subscales, but indicating levels of either disagreement or undecided responses to subscales other than intrinsic motivation.

Participants ranged in MVPA physical activity minutes accrued between 0 to 134 minutes over the two weekdays and during the school day. Free time physical activity, measured outside of school, including weekends, resulted in a range of 1 to 374 minutes for participants. Table 1 contains

Table 1

Minutes of MVPA for males and females from the two school settings ($N = 68$)

School Setting		Private		Rural Public	
		Female (N = 23)	Male (N = 21)	Female (N = 15)	Male (N = 9)
FTMS-A					
Introjected Regulation					
	Mean	2.13	2.80	2.58	2.63
	SD	.87	.77	.85	1.08
External Regulation					
	Mean	1.90	2.62	2.59	2.11
	SD	.86	.74	.82	.78
Identified Regulation					
	Mean	3.97	4.31	3.87	4.00
	SD	.62	.64	1.02	.53
Intrinsic Motivation					
	Mean	4.61	4.62	4.60	4.61
	SD	.53	.49	.41	.53
Amotivation					
	Mean	1.59	2.02	1.58	1.72
	SD	.82	.88	.47	.55
School MVPA					
	Mean	28	85	20	24
	SD	23	26	16	23
Free Time MVPA					
	Mean	121	157	78	157
	SD	90	67	58	86
Total MVPA					
	Mean	149	242	98	181
	SD	108	77	62	103

Note. MVPA – four-day accumulations of moderate to vigorous physical activity. Private school children were engaged in daily physical education while public school children were involved in health class instead.

school by gender physical activity counts for the sample. Further analyses of differences between study groups and the recommended 60 minutes of MVPA include the following. Male participants from both schools were statistically similar to the recommended 60 minute per day on most days, $t = -1.028$, $p > .05$, $n = 30$. Further, females were less than the recommended amount of MVPA, $t = -7.31$, $p < .01$, $n = 38$.

To satisfy the assumption of MANOVA, a test of the covariance matrixes was run, resulting in no concern over equality of variances, Box's $M = 81.23$, $p > .05$. Multivariate analysis of variance produced significant models for school type $F(7, 58) = 5.51$, $p < .05$, Eta2 = .40 , gender $F(7, 58) = 5.22$, $p < .05$, Eta2 = .39, and a significant interaction effect, $F(7, 58) = 7.14$, $p < .01$, Eta2 = .46. Between-subject effects were not found in

relation to *FTMS-A* subscale scores for introjected regulation, external regulation, indentified regulation, intrinsic motivation, and amotivation ($p > .05$), $F(1, 64) = 2.57, .21, .85, .01$, and 1.23. However, gender effects were noted for free time minutes of MVPA, $F(1, 64) = 8.43$, $p < .01$, Eta2 = .12; and school time MVPA, $F(1, 64) = 27.59$, $p < .01$, Eta2 = .30. Further, private school children were more active than their public school counterparts during school, $F(1, 64) = 33.58$, $p < .01$, Eta2 = 34. Interactive effects were noted for external motivation means, $F(1, 64) = 8.08$, $p < .01$, Eta2 = .12, and school MVPA, $F(1, 64) = 19.88$, $p < .01$, Eta2 = .24. Specifically, school MVPA demonstrated that girls from both schools were engaged in comparatively less school time MVPA than their male counterparts during the study (Figure 1). The biggest gap between males and females was seen in the private school MVPA minutes and public school free time MVPA.

Relationships between Key Study Variables

The relationship between *FTMS-A* external subscale scores and minutes of MVPA for both school and free time are found in Table 2. In this, motivational subscales were not predictors of MVPA during free time or while at school. Age was the only significant predictor of MVPA, and school MVPA was related to free time physical activity. There were also moderate relationships between subscales (see Table 2).

Discussion

Physical Activity Levels and Group Differences

Results from these data indicate that time spent over the four-day period by males (public and private school) engaging in MVPA averaged about 56 minutes per day. This is enough physical activity per day to approximate the center for disease control recommendations of 60 minutes on most days (Department of Health and Human Services, 2008). Further, these males were more active than the females studied who failed to reach this target value of MVPA. Girls in the study accrued about half of the 60 minutes of MVPA suggested for an average day based on the Department of Health and Human Services (2008) recommendations. This is consistent with Harrell et al. (2003) and supports the notion that males are more active than females. What is of further interest is the lack of free time physical activity in the rural public school females studied. Results found in Table 1 demonstrated that these females are accruing about one third of the necessary physical activity minutes on a daily basis. These rural middle school females are at risk for hypokinetic diseases associated with inactivity (Department of Health and Human Services, 2008).

Interesting to note was the circumstances of physical education programming for both the private and public schools. These two schools are from the same locale about 16 miles apart and participating in the same state curriculum that offers health and physical education for students over the course of the year. What is of importance is that the public school middle school participants were involved in health classes and not engaged in daily physical education at during the study. The private school children all had physical education at the time of the study. The differences between male and female overall activity counts is noteworthy in that even with physical education minutes, middle school girls are not obtaining the recommended minutes of MVPA. There can be programmatic as well as social reasons for these differences.

Gender effects. There were gender differences in overall MVPA where males were significantly more active than females. School MVPA during the school day favored males from the private school and also demonstrated that females were benefiting less from physical education programming in terms of MVPA during instruction. It is difficult to speculate why these private school girls engaged in less MVPA during physical education than their male counterparts since this private school only had one physical education instructor (a female teacher). What is

Table 2

Intercorrelations Between Key Study Variables including *FTMS-A* and MVPA ($N = 68$)

	1	2	3	4	5	6	7	8
1. IJ	----	.45**	.15	.08	.38**	.09	.09	.03
2. EXT		----	-.01	-.28*	.34**	.04	.08	.10
3. ID			----	.47**	-.26*	.03	.14	.04
4. INT				----	-.26*	.06	.09	.01
5. AMOT					----	.01	.13	.01
6. Age						----	-.21*	-.17
7. School MVPA							----	.55**
8. Free Time MVPA								----

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).
IJ – Introjected Regulation; EXT – External Regulation; ID – Identified Regulation; Intrinsic Motivation; AMOT – Amotivation; MVPA – Moderate to Vigorous Physical Activity.

known is that this private school separated males from females during physical education and this has two potential inferences. First, males have been found more active than females in other physical activity studies and these data support gender differences in middle school physical activity behavior (Harrell et al., 2003; Sallis et al., 2000; Trost et al., 2002; Yan & McCullah, 2004). Second, the nature of program offerings from this private school physical educator may have differed for the two groups of learners within the same teacher's instructional offerings. Factors related to motivation of female learners, instructional differences, and other issues impacting MVPA cannot be verified since the researcher was limited to surveying free time motivation and collecting physical activity data. What is found in Figure 1 are the school effect and gender interaction pointing to a potential difference in physical education programming that benefited males from the private school more than females. Recess was an option available to all

study participants regardless of school setting. Differences in recess behavior from private school girls may also be a contributing factor but cannot be verified since there was no attempt to determine the nature of each child's activities during this time.

The boys from the rural public school also demonstrated higher numbers of minutes of MVPA during free time than the female study participants from either school setting. These data are supportive of the notion that middle school males are more vigorously active than their female counterparts. An explanation of this is found in Ernst and Pangrazi (1999) inferred that girls had more positive feelings toward physical activity programming that was less vigorous and not as competitive. It may well be that these girls were engaged in a physical education program that was more vigorous and competitive in nature. The type of lessons provided students was not studied; however, these data support that females in the study did not register bouts at a MVPA level using the Actigraph monitors. Further, it is speculated that peer and social interactions, again cited in Ernst and Pangrazi, may have mediated activity levels for females, but more study is needed to confirm if boys are more active during physical education based on the nature of the curriculum.

School effects. The hypothesized school effect in favor of the private school was speculated based on the idea that children from the private school located in a small urban area would have more afterschool physical activity options and thus engage in more free time MVPA than their rural public school counterparts. Local YMCA and other sport facilities are prevalent in the town where the private school was located, as well as, easier access to peers in their neighborhoods. These issues and the potential for parents of private school children to have higher incomes than families living in rural areas were potential factors not studied in the current data collection. However, Ross (2000) found these neighborhood issues are predictors of inactivity in children. The public school used for data collection in the current study was part of a rural system were opportunities exist for some children based on school programs, but where organized community sport physical activity is limited. The rural school district is located in a portion of the Midwest known for state parks and other tourist opportunities. These data demonstrate that a school effect was not found in relation to free time MVPA and that differences found between the schools are related to school time MVPA mainly from the private school males. Further, public school males are as active as their private school counterparts during free time.

The main effect of school MVPA in favor of the private school is a function of the state curriculum where not all children take physical education in middle school for the entire school year. What is interesting and encouraging for male participants in the study was the high volume of MVPA behavior found even when physical education program was missing. These males are supplementing their activity in school with MVPA outside of school at a rate comparable to private school males. It is discouraging that these data demonstrate less MVPA minutes accrued by female middle school children regardless of setting and the engagement in structured physical education classes by the private school females. In this regard, middle school girls from the private school are more similar to their female counterparts from the public school in relation to MVPA engaged in during school hours regardless of curricular offering (health or physical education). This may be a reflection of actual physical education and recess activity participation by the girls. The private school used for the current study had separate male and female physical education time slots. Boys and girls did participate in the same curricular offering and it appears that the separate classes had different activity patterns within the school program. These data would suggest different patterns of participation within the curricular offering of basketball (activity at the time of the study) for girls from the private school who chose to take

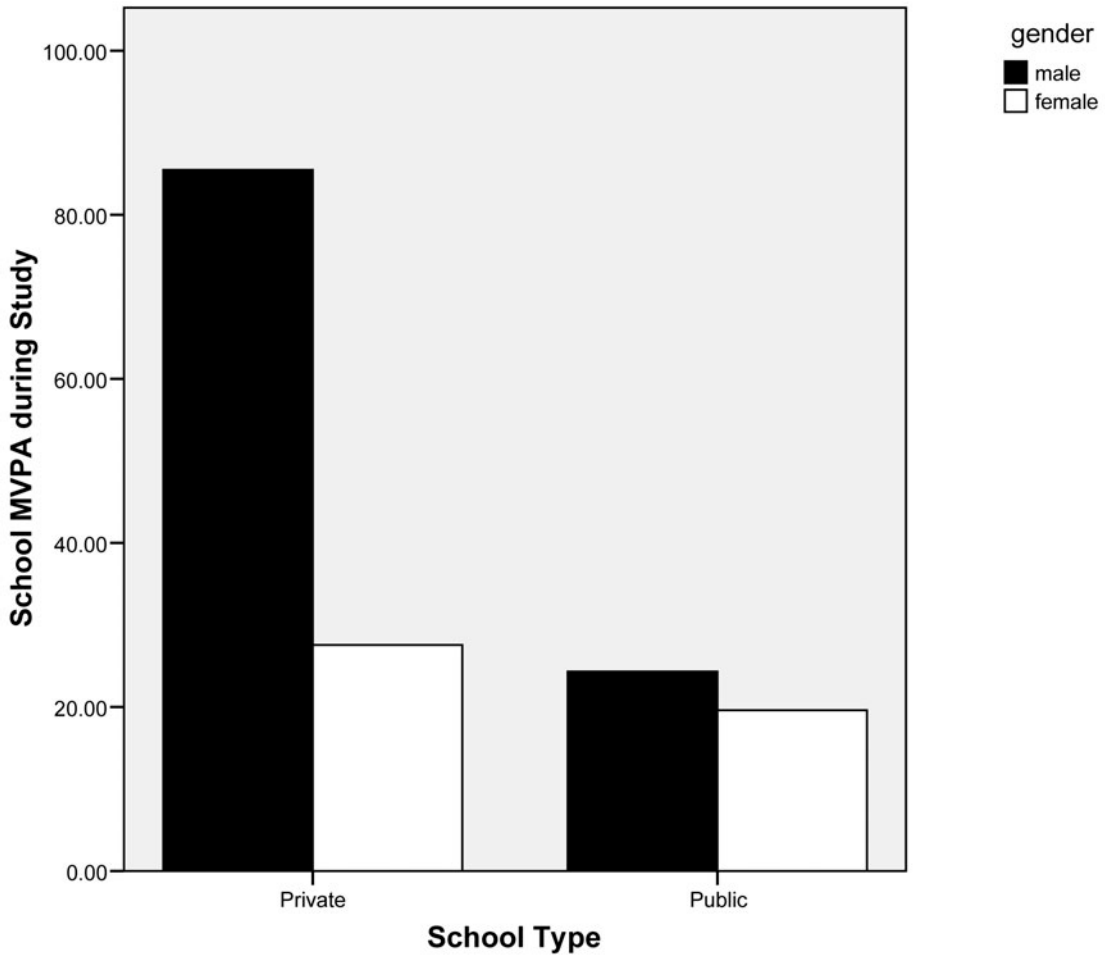

Figure 1. Minutes of MVPA during school hours for males and females from the two schools.

part in the study.

Interactive effects. Figure 1 demonstrates an interactive effect where girls are more likely to be inactive. This is consistent with Sallis et al. (2000) who identify, in their review of physical activity literature, girls as a group prone to inactivity. There could be a programming problem within the private school or a broader social issue where girls are not reinforced for vigorous physical activity participation in general. This would be consistent with socio-cultural constraints noted for females during physical activity starting at a very young age where vigorous participation is not encouraged by peers or perhaps program leaders (Campbell & Eaton, 2000). However, there are no data to verify socio-cultural influences, nor do the free time motivation scores demonstrate any motivational profile differences in females from their male counterparts.

Free Time Motivation and PA

Free time motivation scores are not predictors of physical activity behavior in these children. There are multiple reasons for this inconsistency in findings from Alexandris et al. (2002) who found links between exercise and both intrinsic and extrinsic factors in adults. First, the current scale used to study free time motivation may lack

the sensitivity to actual physical activity engagement and focused more on general free time activity selection. Children may not make the link between free time where activities such as sports or other physical activities versus more sedentary pursuits when responding to the questionnaire. This would be a validity issue for the *FTMS-A* or an indicator that free time motivation is a multifaceted construct that cannot be measured by general items. There may be many dimensions to free time motivation, and further study is needed to tease out any semantics between free time and time for making physical activity decisions. Second, not accounted for in the free time motivation scale and the current study design are the outside influences such as availability of physical activity options, transportation to sports, actual parent influences, or any factor out of the child's control that may impact on ability to be active at a moderate to vigorous level. Third, these data may be indicating that there are many motivational profiles resulting in active and inactive children during the middle school years. Finally, the reliability estimates found in Baldwin and Caldwell are barely acceptable and call for additional work on the *FTMS-A* to further support reliability of the measure.

Of considerable consequence for program providers are the high Likert scores for intrinsic motivation. These children are engaging in free time activities for reasons related to fun and enjoyment and other more extrinsic motivators such as parents or friends are not as powerful for these children who took part in the study. It is likely that middle school children can have an amotivation profile or be parent driven to engage in physical activity, but these data fail to support a link to MVPA. Relationships that did exist failed to explain physical activity behavior; and specifically, moderate correlations between external regulation and amotivation found in Table 2 indicate that children who are scoring high on wanting others to like them or be impressed are also scoring higher in perceptions that are considered amotivation.

One additional note about these motivational scores is that the highest magnitude of relationship was found in introjected regulation and external regulation indicating that children who had rule-driven free time motivation (parents and others providing motivation for free time activities) are also influenced by wanting to impress friends. Again, these variables did not link general free time motivation to physical activity behavior during free time.

There are several limitations to these data. First, the comparison between public and private schools is limited since the private school was located in a small urban area and the public school was a rural school district with buildings surrounding a smaller town. Also, it was noted that both samples did not have comparable physical education programming at the time of data collection. Recess physical activity opportunities were also not studied to determine the nature of physical activity opportunities during this time period. This nullifies any inferences that the private school setting was a better place for children to engage in MVPA. A second limitation of the study is that motivation during physical education class and for physical activity was not studied to determine if socio-cultural constraints influenced females. What is known is that these girls from both public and private schools are not engaging in MVPA as a rate comparable to their male counterparts. The gender interactions noted in these data could well be a sampling issue that favors highly active males choosing to take part in the physical activity study more so than highly active females. Without more information on students who failed to enroll in the study, this cannot be verified. Third, the time of data collection occurred during the late fall and winter months in a Midwestern locale. This is a further limitation of these data since some parts of the United States vary from more severe to milder weather during the time of study.

Finally, the school time MVPA findings are limited by the lack of information on curricular

offering during physical education classes for these private school participants. For the males from the private school this is of considerable consequence given the average value of 85 MVPA minutes per child over the two weekday data collection periods. These adolescent males are gaining more than two-thirds of their daily MVPA minutes during school recess and physical education. It is unknown what factors contribute to these values and also what affected the females' participation in MVPA who were from the private schools. Further, these private school girls were comparable to their female public school counterparts engaged in health rather than physical education during the time of the study. More study is needed to determine if the movement of females during physical education is different because of curricular decisions or more subtle socio-cultural influences.

More study is needed to determine the extent that these findings generalize to other children from other settings. First, replication of this study in larger urban areas may yield different findings. Further, motivational profiles could be used as a grouping variable and children be allowed to make free time decisions in a more structured setting such as during an afterschool program where sedentary and physically active choices are provided. Other samples that included ethnic groups not represented in this study are needed to further study physical activity behavior. Finally, control for family resources such as income, access to physical activity facilities, and other factors are needed to determine if free time motivation is being mediated by other variables in relation to free time physical activity. The impact of family relations and cohesion on physical activity is an important topic in need of further study outside of school based settings. In conclusion, it is unclear the role that free time motivation plays in adolescent children's physical activity decision making. There are many factors that need to be controlled in order to more fully understand both gender differences in physical activity and potential determinants to inactivity in both males and females.

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