

Combined Perspectives of Parental Social Support and Differences in Physical  
Activity Among Latino Youth in Rural Washington

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A thesis  
submitted in partial fulfillment of the  
requirements for the degree of

Master of Public Health

University of Washington  
2012

Committee:  
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Program Authorized to Offer Degree:  
School of Public Health

## **Introduction:**

Physical activity participation among children and adolescents depends in part on many factors and resources which often operate within the home and school environment (Ferreira et al. 2006). Evidence shows that physical activity levels decline markedly during adolescence, especially among females, and efforts to improve physical activity are especially salient given the potential to change such trends via targeted efforts to promote and enhance PA participation (Kimm et al. 2002; Nader et al. 2008; Graham, Sirard, and Neumark-Sztainer 2011). The health consequences of inactivity—whether it is obesity alone, or a combination of the myriad other concomitant illnesses—and the high prevalence of such ailments in the United States demand effective interventions to address the negative health burden (Ogden et al. 2012; Daniels et al. 2005).

Creative programs for improving physical activity among children and adolescents are crucially needed in resource poor locations with vulnerable, ethnically diverse populations. Only 15.8% of Hispanic and Latino youth meet the Federal physical activity guidelines for aerobic physical activity, the smallest percentage of any one racial and ethnic group in the United States (U.S. Department of Health and Human Services 2012a). In contrast, Hispanics and Latinos comprise the highest percentage of obese children and adolescents (U.S. Department of Health and Human Services 2012b). Such differential health behavior and outcomes may be due to the interplay of environmental, cultural and socioeconomic factors (Nyberg, Ramirez, and Gallion 2011).

Among other factors, social support has been explored as a possible contributor to the adoption of healthy behaviors, and parental support in particular is associated with improved uptake and adherence to physical activity regimens in children (Ferreira et al. 2006; S. G. Trost

et al. 2003). Parent perceptions of physical activity benefits and subsequent attempts to encourage activity have positive effects on a child's physical activity levels(Heitzler et al. 2006). Further, social support from family members can influence to what extent individuals engage in activity and respond to exercise opportunities (e.g. a structured physical activity intervention), especially among females (Sallis, Hovell, and Hofstetter 1992). Social Cognitive Theory (SCT)—which grounds many interventions in the field—provides a potential explanation for how and why parental support may matter in influencing children's physical activity levels (Bandura 2004). Peripheral social factors and influences act with individual efforts to shape and reinforce notions of self-efficacy and subsequent health behaviors, in a variety of settings (Motl et al. 2007). Previous work has shown that self-efficacy, a construct of SCT, has been shown influential as a target of intervention for increasing physical activity among adolescent females (Dishman et al. 2004).

Despite evidence linking parental support to improvements in physical activity, the possibility exists that discordance can emerge between what parents believe their support to be, and what the child perceives that parent's support to be. There is evidence to suggest that children's perceptions of social support, as opposed to their parents, are more strongly related to positive physical activity behavior (Barr-Anderson et al. 2010). However, such examinations of differing perceptions and their effect on physical activity do not take into account the potential for disagreement between the parent and child regarding perceptions of parental support. Because both the child and parent can separately perceive and report a different level of social support, relying on only one perspective leaves the social support measure susceptible to considerable bias; either as a result of parent or child efforts to be socially desirable, or due to misconstrued and subsequently reported support by the child (Prochaska, Rodgers, and Sallis

2002). We sought to examine whether agreement or disagreement between parent and child perceptions of level of social support had differential influence on the youth's physical activity. It is possible that combining perspectives of both the youth and parent provides a more comprehensive and informative picture of social support. Data from an 8-week summer physical activity (PA) program was used to explore both parent and child/adolescent perceptions of social support for physical activity, and the effect that positive concordant perceptions of support had on PA pre to post intervention.

This research study aims to evaluate social support in a novel way, by combining parent and child perceptions of parental support and examining differences between genders. We examine differences in the physical activity behavior response to an 8 week structured summer physical activity program between those youth with positive parental support and non-positive support. Finally, we will identify any differences in the support-physical activity relationship that may be present between male and female youth participants. It is hypothesized that positive concordant support, versus all other combinations of support, prime children and adolescents to participate in increased physical activity following a structured activity program.

## **Methods:**

### *Program description and participants:*

Go Active Summer was a multi-factorial physical activity program that ran for eight weeks, encouraged peer support in its intervention design and consisted of supervised, structured sport and play activity sessions administered for two hours, three times a week at the local community center (Perry et al. Unpublished manuscript). Each session's participants were split into male and female groups, and led by two of four (total) high school or college student fitness

instructors; individuals drawn from the community and vetted for their leadership capabilities and influence as positive role-models. Participants were monitored and prompted to participate in various activities (e.g. dodge ball, basketball, tag, etc.) where effort and active involvement were emphasized ahead of strict competition or game outcome. There was no intervention component addressing parent support included in Go Active Summer.

Participants between the ages of 10 and 14 were actively recruited two weeks in advance of the program start date. To be eligible, individuals could not be concurrently enrolled or participating in any other sport or structured physical activity program. The Go Active Summer program was provided free of charge to any eligible child/adolescent.

Written consent for both child and parent participation was obtained from parents prior to program initiation and study measurements. Child participant assent was also obtained. Study materials (Program information, consents, assents, etc.) were available in both English and Spanish. Approval for the Go Active Summer program was received from the University of Washington Institutional Review Board.

#### *Measures:*

##### **Social Support**

Prior to the start of the program, children and parents separately completed the social support survey. This survey consisted of five questions regarding tangible and intangible parental support (See appendix). Parents and children responded using a 5-point Likert scale, which quantified the number of days in a week each support component was typically given or received (“None”, “Once”, “Sometimes”, “Almost every day”, and “Every day”). This survey has been validated among adolescents of different racial/ethnic backgrounds as well as over time,

demonstrating the multi-group factorial invariance and longitudinal factorial invariance of the respective measures (Dishman et al. 2010).

#### Physical activity

Objective physical activity measurement of child/adolescent participants was obtained via the Computer Science and Applications (CSA) activity monitor, a uniaxial accelerometer used to measure physical activity in youth (S. Trost et al. 1998). The monitors, worn above the participants' right hip and fastened using an elastic strap, recorded activity in time intervals of one minute over a period of three days, both before and after program intervention. The protocol for participant use of the monitors, as well as selection of a three day time period and interval/epoch time of one minute was modeled off of previous research which demonstrated that such measures were effective in evaluation of physical activity in youth (Freedson, Melanson, and Sirard 1998).

Demographic information was collected from the participating parent and included questions regarding employment, education and family composition.

#### *Analysis:*

In order to compare perceptions of social support between parents and children, an overall social support score was created for each individual by averaging the item responses (ranging from 1 to 5) of the five separate questions on the social support survey. Parent and child scores were paired to form dyads and were categorized as either high support/positive concordant support or low support/discordant based on the median score for the sample. The total social support scores for both children and parents were all significantly correlated with individual component social support measures at the  $p < 0.01$  level, indicating that the use of a single total score was feasible for using as a measure representing overall social support.

Considering that both the parental perception of support for physical activity and the children's perception of the same support can be dichotomized into either "supportive" perceptions or "unsupportive" perceptions, it follows that four possible categories can be designated when parent and child perceptions are combined. These categories are (1.) support perceived by parent and child (2.) support perceived by child, with no parental perception of support (3.) support perceived by parent only, and no support perceived by the child, and (4.) no support perceived by both parent and child. It is conceptually difficult to parse the differences between categories 2, 3 and 4, and all three suggest a possible disjunction in perception and some of amount of unsupportiveness, which taken together set them clearly apart from category 1, where support is unequivocal.

The accelerometer data were cleaned and scored using MeterPlus software version 4.2.0 from Santech, Inc. The data were categorized into time spent in sedentary, light, moderate, and vigorous activity using calibration thresholds specific to youth (Freedson, Melanson, and Sirard 1998). A valid hour was defined as an interval of 60 minutes where any activity count was registered, and a valid day was defined as at least 10 hours of wear time per day.

In order to account for varying length of accelerometer wear time by the participants, we computed the proportion of valid hours wear time that was spent in moderate to vigorous physical activity (MVPA) by summing total time of valid hours spent in MVPA and dividing by total valid hours. We focused on MVPA because it was previously established that within this range of intensity beneficial changes in aerobic fitness and muscle strength are able to occur in children and adolescents (Strong et al. 2005), and our use of proportions eliminated misleading time units that could skew the results in favor of those who wore the monitors longer than

instructed. A change score was computed by subtracting the post MVPA proportion from the pre MVPA proportion, indicating the change in the proportion of wear time spent in MVPA.

High or low support parent-child dyads were then matched with their respective change scores for MVPA using the same child ID. We then compared mean change scores between support groups using an independent sample t-tests, assuming unequal variances. This was also done for both male and female subgroups.

We used independent t-tests to compare the difference in the change in proportion of MVPA between the high and low support participants in responses to the Go Active program.. Statistical analysis was performed using SPSS version 10.

## Results:

Demographics of the sample are reported in Table 1.

Table 1: Sample Demographics

<b>Characteristic:</b>	
<b>Age</b>	Mean
Male	11.5
Female	11.6
<b>Sex</b>	
Male	N=15
Female	N=13
<b>Ethnicity</b>	%
Hispanic	94.2
Non-Hispanic	5.8
<b>Parent Education</b>	%
1 to 6 years	34.6
7 to 8 years	7.7
9 to 10 years	7.7
11 to 12 years	42.3
Some college	1.9
Completed college	5.8
<b>Parent Marital Status</b>	%
Married	68.6
Steady partner	11.8
Separated	9.8
Single	9.8

<b>Parent work outside home</b>	<b>%</b>
Yes	69.2
No	30.8

The mean overall social support measure for children/adolescents was 3.175 (SD 1.6), and the mean score for parents was 2.99 (SD 1.37). Median support scores for youth and parent participants were the same, at 3.2.

Thirty two percent of parent-child dyads fell into the high support category, and 67% into the low support/discordant support category. In girl-parent dyads, 46% were high support, and in boy-parent dyads only 30% were high support. Paired overall social support scores from parent and child that both fell above 3.2 (on a 5 point scale), which corresponds to a rating of “Almost every day” and “Every day,” were designated as high concordant support. Those pairs where one of the individuals comprising the dyad’s scores fell below the 3.2, which corresponds to a rating of “None”, “Once”, or “Sometimes,” were classified as low support. And similarly, those dyads where both scores fell below 3.2 were also defined as low support.

All participants had at least 1 valid day of physical activity pre program intervention and 1 valid day post program (ranges 1-4), indicating that they had at least 10 valid hours on the valid days. The mean number of valid physical activity hours among youth participants pre program was 46.2, and post was 41.46. Combined boys and girls pre program had an average of 5.21 (SD 3.38) valid hours MVPA, and post program 3.77 (SD 2.69) valid hours MVPA. Mean valid hours of MVPA for boys pre program was 7.06 (SD 3.39) and post 5.03 (SD 2.71). Mean valid hours of MVPA for girls pre program was 3.1 (SD 1.79) and post 2.33 (1.86). Pre program high support boys had a mean of 7.62 valid hours of MVPA and post had a mean of 4.37 valid hours MVPA. For girls in the high support category the mean valid hours of MVPA was 3.11 (SD 2.13) pre program and 3.23 (SD 2.46) post. Table 2 summarizes these results.

Table 2.

	Mean Hours MVPA Pre	Mean Hours MVPA Post
<b>Combined</b>	5.21 (SD 3.38)	3.77 (SD 2.69)
<b>Girls</b>	3.10 (SD 1.79)	2.33 (SD 1.86)
High Support Girls	3.11 (SD 2.13)	3.23 (SD 2.46)
<b>Boys</b>	7.06 (SD 3.39)	5.03 (SD 2.71)
High Support Boys	7.62 (SD 3.64)	4.37 (SD 1.57)

In the combined sample of males and females there was no difference in the change in the proportion of time spend in moderate-to vigorous physical activity between the participants with high concordant support and those with low support. There was no significant difference in the change in the proportion of MVPA in males who differed by support group (low and high). However, in females, there was a significant difference in the change in proportion of time spent in MVPA between high support and low support groups, with those who had high support showing a mean increase of 5.3% in their proportion of MVPA ( $t = -2.42$ ;  $P < 0.047$ ).

### **Discussion:**

This study tested the relationship between different levels of support, measured via agreement between children and parents on perceived parental social support, and the change in physical activity in response to a structured summer physical activity intervention. Our study showed that for girls with positive concordant social support, measured by both child and parent

perspectives, there was a positive change in physical activity following an 8-week structured summer exercise program. Girls with discordant or negatively concordant parental support did not have a positive activity change. The relationship between positive concordant support and positive change in physical activity did not hold for male participants, and there was no significant difference in physical activity change between any of the support categories.

The study was unique in that we categorized youth into two groups based upon the agreement and disagreement between parental perception of support given and the child perception of support received. We dichotomized level of agreement between parent and youth perceptions into positive concordance of social support between parent and child versus all other combinations of support because previous research has shown positive associations between physical activity and both parent and child perspectives of support, independently (Heitzler et al. 2006). Our study builds upon that study by combining both perspectives and analyzing the effects of corroborated parental support. Our results extend the finding from previous research that found that a child's perception of support received has a stronger positive association with youth physical activity than a parents perception ( Barr-Anderson et al. 2010) by suggesting for girls that the degree of agreement in perceptions of support given and received is important.

Our results suggest that for girls, the match between perception of support received and given may prime girls to respond more positively to interventions aimed at promoting physical activity. This possibility suggests that future efforts aimed at promoting physical activity in adolescent girls include a component aimed at increasing parents' awareness and use of the different forms of encouragement and support early in the intervention so that there is a match in the perceptions of support received and given early in the intervention which may in turn prime the girls to respond positively to the intervention. There is evidence suggesting that parents who are

informed about all the benefits of physical activity for their children, will increase their encouragement and support of physical activity, enabling improved physical activity participation in their children (Heitzler et al. 2006). Furthermore, adolescent girls who have greater perceived familial support tend to engage in more physical activity, and maintain higher levels of physical activity than their low support counterparts during adolescence (Dowda et al. 2007). Thus, girls who have high concordant parental support might subsequently maintain an increased level of physical activity following the program, if the strong level of social support continued beyond the intervention. .

Our finding that the level of agreement makes a difference in the change in physical activity participation in response to a structured physical activity program suggests that future research should explore why and how perceptions of social support are concordant or discordant among parent-child dyads, especially among female youth participants.

Our study sample was comprised predominantly of Hispanic and Latino participants. It remains to be shown whether the relationship between parent and child perceptions of support and physical activity remain true for other population sub-groups, in different settings. Further questions about the relationship between child and parent perceptions of support and PA participation should be explored among other racial and ethnic groups.

There are several limitations to this study. The Go Active Summer program was a feasibility study with a small sample size and therefore may not have had the power to detect potential changes pre to post program. The measure of social support relied on self report and therefore is susceptible to social desirability and recall bias, both by the child and parent (Prochaska, Rodgers, and Sallis 2002), Another potential limitation is that our study only surveyed one parent on social support measures, and it was not recorded whether the mother or

father participated. Future studies of this kind should utilize measurements from more than one family member, in addition to the child/adolescent participant, in order to triangulate or improve the estimation of the “true” social support. A strength of this study was the use of objective physical activity measurement by accelerometer. Objective measurement can help avoid bias and other measurement errors common with self-report of physical activity, and has been shown to be particularly effective in youth populations (Kohl, Fulton, and Caspersen 2000; S. Trost et al. 2002). Another strength was that this study worked with rural Latino youth, a high risk hard to reach population. We believe that surveying and comparing--in a novel way--both child and parent’s perception of social support adds to previous work done in the field.

In conclusion, our study suggests for adolescent girls who reported strong parental support and whose parents reported giving strong support, they had an increase in their level of physical activity in response to a structured physical activity program. More research targeting sources and pathways of social support for female children and adolescents is needed to build on the findings contained in this study. Additionally, further exploration of the effect of familial social support is warranted for all children and adolescents, male and female, to improve future efforts at health and social behavior change.

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Appendix:

<b>During a typical week how often has a member of your household...</b>	None	Once	Sometimes	Almost every day	Every day
...encouraged you to do physical activities?	1	2	3	4	5
...done a physical activity or played sports with you?	1	2	3	4	5
...provided transportation to a place where you can do physical activities or sports?	1	2	3	4	5
...watched you participate in physical activities or sports?	1	2	3	4	5
...told you that you are doing well in physical activities or sports?	1	2	3	4	5

(Prochaska, Rodgers, and Sallis 2002)