

Associations between Teacher Wellbeing and Social Support for Physical Activity in Two Urban School Districts during the early stages of the SARS-CoV-2 Pandemic

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Abstract

Given physical activity's protective effects on mental health and the potential for school districts to support teachers in this area, we explore teacher wellbeing protective factors including social support for exercise. Specifically, we measured the association between social support for exercise and teacher wellbeing in racially and ethnically diverse urban school districts. Based on a prior partnership with 19 schools across 5 districts, we obtained approval from two districts to outreach to teachers (n=206) and invite them to complete the Teacher Subjective Wellbeing Questionnaire and the Social Support and Exercise Survey during the 2020-2021 academic year. We applied linear regression models for continuous variables with teacher wellbeing as the dependent variable and social support as the independent variable adjusting for teacher- and school-level factors. Teachers (n=121) across eight K-8th grade schools completed the survey. The majority of teachers identified as female (77%) and non-White (84%). In the adjusted analysis (n = 104), there was a positive association between family social support for exercise and teacher wellbeing ($\beta = 0.31$; P Value < 0.05). Thus, for every unit increase in family social support for exercise, a small 0.31 unit increase in teacher wellbeing was predicted. Additional research is needed to better understand this relationship in marginalized school districts as it may yield insights to be applied through multiple channels. District representatives have an opportunity to positively influence teacher wellbeing, an important component to supporting student success, building educational equity, and closing the achievement gap.

Keywords: SARS-CoV-2, Social Support, Physical Activity, School Teachers, Mental Health

Prior to the SARS-CoV-2 pandemic, teachers reported some of the highest levels of job-related stress of any occupation in the U.S. (Gallup, 2014). Key sources of stress reported by teachers have included an unsupportive school culture, sustained high job demands, and low job autonomy (N. von der Embse et al., 2019; Gallup, 2014; Greenberg et al., 2016). Strained relationships between teachers and other school staff, increased reliance on high stakes testing, minimal opportunities for joint decision making, and frayed emotional regulation can lead to a vicious circle of burnout and turnover (Beteille et al., 2011; Grusky, 1963; Kyriacou, 2001; Lee et al., 2011; Li Grining et al., 2010; Swartz & McElwain, 2012; Van Maele & Van Houtte, 2012). Consequences include low performance, which manifests through challenges in fostering a positive learning environment in the classroom, a low sense of wellbeing, and high turnover. These, in turn, spill over to impact other areas, including lower student achievement in math and literacy performance (Gordon, 2010; Hoglund et al., 2015; McLean & Connor, 2015). In a study of 270,000 teachers in over 7,000 schools across 5 states, authors found that one third of teachers leave in the first 3 years while 50% of teachers leave in the first 5 years. They reported the highest rate of teacher turnover in schools with $\geq 75\%$ free or reduced meal program participation (FRMP) (Barnes et al., n.d.). The teacher turnover rate in these schools was 5.5% above the average.

Teacher wellbeing, defined as healthy and successful functioning at work, has emerged as an essential component in fostering positive school climates and promoting student academic and social-emotional development (Mankin et al., 2018; Renshaw et al., 2015; N. von der Embse & Mankin, 2020). Teachers with greater wellbeing have been found to have greater capacity to initiate and foster relationships with students, utilize effective classroom management strategies, and teach and model social and emotional skills to students (Jennings & Greenberg, 2009). Teacher wellbeing explains 8% of the variance in student standardized test results, even after controlling for relevant student demographic variables. While this variance may seem low it is statistically significant and represents a modifiable factor worthy of additional inquiry (Briner & Dewberry, 2007).

The SARS-CoV-2 pandemic disrupted teachers' professional and personal lives due to shutdowns, heightened tensions, loss of life disproportionately experienced by teachers and students in low-income areas, indicating that wellbeing may have further suffered during this period (Berkowitz et al., 2020; Bixler, 2020; Burtscher et al., 2020; Chen & Krieger, 2020; Dubnow, 2020; Findlay, 2020). However, descriptions of how the wellbeing of teachers serving low-income students fared amidst the SARS-CoV-2 pandemic has not been examined (Calvert et al., 2021; Kuhn et al., 2022; Tri Sakti et al., 2022).

Understanding teacher wellbeing during the SARS-CoV-2 pandemic will provide an initial step towards developing potential interventions for a future pandemic (N. von der Embse et al., 2019; Sallis et al., 2020). Further,

a critical additional step, will be to understand potential protective factors for teacher wellbeing and what opportunities may exist to promote them. A particularly promising one is physical activity (PA) among teachers, which school districts have multiple avenues to support (Biddle & Mutrie, 2007; Greenberg et al., 2016).

PA has shown to be an effective therapy for many chronic diseases through direct effects on both mental and physical health (Biddle & Mutrie, 2007; Powell et al., 2019; Sallis et al., 2020). School districts have opportunities to support PA among teachers in their personal lives (e.g., through gym discounts), in their classrooms (e.g., through short PA classroom breaks), and in physical education curricula that foster active lives for both students and teachers (Sallis et al., 2003). These social supports for exercise might be effective leverage points to build interventions (Dishman et al., 1985; Sallis et al., 1989, 1992), with the goal of protecting from the negative consequences of teacher burnout and turnover (Cook et al., 2017; Donovan et al., 2022; Greenberg et al., 2016; Li et al., 2022). Therefore, in this pilot study, we sought to describe associations between social support for exercise and teacher wellbeing in racially and ethnically diverse urban school districts.

Methods

We built on an existing partnership with 19 K-8 schools across 5 districts in majority low-income and Latinx census tracts in Los Angeles to invite participation in the teacher survey (Escaron, Martinez, et al., 2019; Escaron, Vega-Herrera, et al., 2019; Martinez et al., 2017). Two districts approved the research team working with principals to administer the survey at the school level. During staff meeting time, Principals invited a convenience sample of teachers ($n = 206$) to complete the survey by emailing the survey link and teachers were then offered a thank you bag. Of these, 121 teachers completed the survey, representing a 59% response rate. In October 2020, teachers in schools from one small public district (3 elementary and 1 middle school) completed the survey while in March 2021 teachers in schools from one large public district (3 elementary and 1 middle school) completed the survey. The WCG IRB deemed the project exempt.

Teachers were surveyed during the period of remote/online instruction prevalent throughout much of 2020 and 2021 (Li et al., 2022). The board of the small public school district voted to complete the 2020-2021 academic school year online to best support teachers, students, and families in navigating the uncertainties of the vaccine and variant phases (Rotshild et al., 2021). In contrast, the board of the large public school district elected to have teachers and students return to in person instruction April 2021, shortly after our surveys had been completed, in order to mitigate the repercussions of social distancing.

Surveys included teacher wellbeing and social support instruments as well as teacher- and school/district-level measures (N. P. von der Embse et al., 2015). The Teacher Subjective Wellbeing Questionnaire (TSWQ) is a validated self-report instrument for assessing teachers' wellbeing

(Mankin et al., 2018; Renshaw et al., 2015). The instrument includes 8-items with subscales measuring school connectedness (n=4) and a sense of efficacy in teaching (n=4) on a 4-point Likert scale ranging from 1 (almost never) to 4 (almost always) with possible scores ranging from 8-32, with a higher score indicating greater perceived teaching efficacy or feelings of school connectedness (Renshaw, 2020). The subscales and composite scale have strong internal consistency as well as convergent validity when tested against self-reported school supports and divergent validity with self-reported stress and emotional burnout measures (Renshaw et al., 2015). Applied use of the scale is proposed for monitoring intervention effectiveness at the school or district level that is attempting to foster teaching efficacy or feelings of school connectedness (Mankin et al., 2018).

The Social Support and Exercise Survey (SSES) asks respondents to report how often individuals have said or done things people might do or say to someone who is trying to exercise regularly (n=13). Social support for PA is defined as resources provided to us through our interactions with other people (emotional, informational, and material) (Biddle & Mutrie, 2007). These questions are posed in the context of the last three months and rated twice: once for family and friends and once for acquaintances or coworkers along a 5-point Likert scale ranging from 1 (none) to 5 (very often). Consistent with previous reports, only three items (Exercised with me; Offered to exercise with me; and Gave me encouragement to stick with my exercise program) were summed and included in the regression with possible scores ranging from 3-15 (Eyler et al., 1999; Sallis et al., 1987, 1989).

To examine associations between social support for PA and teacher wellbeing, linear regression models for continuous variables (Stata/MP 16.0, College Station, Texas) were used with teacher wellbeing as the

outcome/dependent variable and social support as the predictor/independent variable. We adjusted for teacher-level factors (gender = male/female; race and ethnicity = white, non-Latino/non-white, Latino; education = Bachelor's or Master's; level = grades K-5/6-8; whether job performance was based on test scores = yes/no; whether salary was based on test scores = yes/no; years of teaching) and school/district-level factors (average class size; % eligible FRMP). In an initial model, we further adjusted for district (to address potential unmeasured differences between the districts, in addition to any potential effects in seasonality or the proximity to school re-openings given differences in when teachers in each district completed the survey). However, the variable lacked significance and did not alter our primary findings, so it was removed from the final model for parsimony. No concerns regarding the assumptions for linear regression were found (Appendix A, Figure A1; also, no collinearity was detected). We hypothesized that we would find a positive association between social support for PA and teacher wellbeing.

To present demographic/other control variable values for the key comparison groups (i.e., those above/below 7.5 on the family social support scale, we ran tab's with chi² tests to compare the categorical factors (gender; race and ethnicity; education; level; job performance; salary). For continuous demographic variables (years of teaching; average class size; and % eligible FRMP), we ran an independent group t-test. Percentages by group are reported.

Results

Across these schools, we observed on average 86.2% of students qualified for FRMP (Table 1). Average class size was 13.6 students. Teachers had considerable professional experience (14.9 years) and were majority female (76.9%), non-white (83.5%), and teaching K-5 (78.2%).

Table 1. Teacher sample (n=121) descriptive characteristics for those teachers reporting family social support below or above cutoff

Variable			Teachers reporting family social support below cutoff of 7.5 (n=43)	Teachers reporting family social support at/above cutoff of 7.5 (n=78)		
Categorical	Sample size n	Percentage %	n (%)	n (%)	Chi2	p-value
Gender	121	-	-	-	4.8	>0.05
Female	93	76.9	32 (74.4)	61 (78.2)		
Male	19	15.7	10 (23.3)	9 (11.5)		
Choose not to answer	8	6.6	1 (2.3)	8 (10.3)		
Race & Ethnicity	121	-	-	-	4.0	<0.05
White; Not Hispanic or Latino	20	16.5	11 (25.6)	9 (11.5)		
Non-White; Hispanic or Latino	101	83.5	32 (74.4)	69 (88.5)		
Education	121	-	-	-	1.0	>0.05

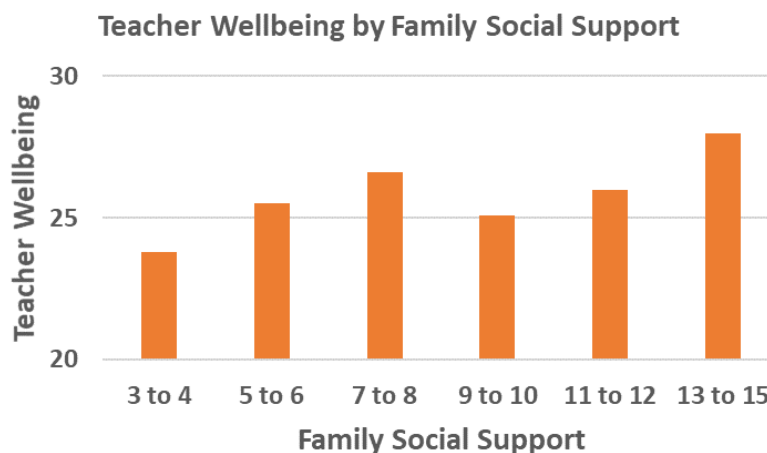
Bachelor's degree, Teaching Credential	50	41.3	20 (46.5)	30 (38.5)		
Master's degree	61	50.4	19 (44.2)	42 (53.9)		
I choose not to answer	10	8.3	4 (9.3)	6 (7.7)		
Grades	119	-	-	-	0.4	>0.05
K-5	93	78.1	32 (74.4)	61 (79.2)		
6-8	26	21.8	11 (25.6)	16 (20.8)		
Job performance on test scores*	120	-	-	-	0.4	>0.05
Yes	33	27.5	10 (23.8)	23 (29.5)		
No	87	72.5	32 (76.2)	55 (70.5)		
Salary on test scores*	121	-	-	-	1.7	>0.05
Yes	3	2.5	0	3 (3.9)		
No	118	97.5	43 (100)	75 (96.2)		
Continuous	Mean	SD	Teachers reporting family social support below cutoff of 7.5 n; Mean (SD)	Teachers reporting family social support at/above cutoff of 7.5 n; Mean (SD)	T-statistic	p-value
Years of teaching	14.9	7.0	43; 14.8 (6.1)	74; 15 (7.5)	-0.2	>0.05
Average class size	13.6	6.9	43; 13.8 (6.3)	73; 13.4 (7.3)	0.3	>0.05
Free or reduced meal program participation	86.2	8.7	42; 87.9 (8.0)	75; 85.2 (8.9)	1.6	>0.05

* Job performance on test scores: "My district evaluates annual job performance based upon student test performance"; Salary on test scores: "My district bases teacher salary/bonus pay on student test performance"

We observed an average TSWQ score of 25.7 (SD=4.4; n = 115; range: 14-32). In the adjusted analysis (n = 104), there was a positive association between family social support for PA and teacher wellbeing ($\beta = 0.31$; 95% confidence interval = 0.04 - 0.58; P Value < 0.05) signifying that for every unit increase in family social

support for PA, a 0.31 unit increase in teacher wellbeing was predicted (Figure 1). The association between acquaintance/coworker social support for PA and teacher wellbeing was also positive but not statistically significant ($\beta = 0.11$; 95% confidence interval = -0.14 - 0.35; P Value > 0.05).

Figure 1. Association between teacher wellbeing and family social support for exercise



Teacher Wellbeing, Teacher Subjective Wellbeing Questionnaire (TSWQ), score with possible range from 8-32 represented on the y-axis with family social support for exercise by 2-point (or 3-point) score groupings (range from 3 to 15) on the x-axis.

Discussion

Describing the relationship between social support for PA and teacher wellbeing produces a snapshot of teacher wellbeing among a diverse set of teachers during the SARS-CoV-2 pandemic. The TSWQ score of 25.7 in the current study is lower than that reported in studies published in 2015 and 2020 (using data collected prior to the SARS-CoV-2 pandemic) in majority white cohorts—respectively TSWQ scores of 28.0 and 26.3 (Renshaw et al., 2015; N. von der Embse & Mankin, 2020). This score is also in line with von der Embse's report in a district, with 67% of students economically disadvantaged, where a decrease in teacher wellbeing throughout the academic year was observed: from 26.3 in the Fall, to 24.1 in the Winter, to 23.3 in the Spring (N. von der Embse & Mankin, 2020). This finding suggests that school administration efforts to engaging teachers during the pandemic through mindfulness and stress reduction activities, as well as opportunities to discuss pandemic related sequelae, may have been effective. The current study successfully reached a high proportion of teachers from racial and ethnic groups serving students within districts with >75% FRMP. To date, the TSWQ has been administered in majority White teacher samples (Mankin et al., 2018; Renshaw et al., 2015; N. von der Embse & Mankin, 2020). The 59% response rate from a convenience sampling approach, during the SARS-CoV-2 pandemic, suggests strong teacher engagement. We found a slight positive association between family social support for exercise and teacher wellbeing— but not among colleagues and friends— suggesting that family social support can cautiously be used to predict teacher wellbeing. Renshaw et al reported strongly positive associations, $r = .57$ and $.62$ between the TSWQ and two hypothesized concurrent-convergent validity scales: Supportive Student Environment Scale (SSES) and Supportive Teacher Environment Scale (STES) (Renshaw et al., 2015). These findings may inform protective factors and potential interventions to support teachers in diverse districts.

While no direct comparison of the teacher wellbeing social support for PA association can be made, examining prior teacher wellbeing reports may offer some insights into the expected strength of this association. In a study examining threats to teacher wellbeing, TSWQ identified teacher stress ($\beta = -0.69$) and burnout ($\beta = -0.70$) (Renshaw et al., 2015). In this same report, analysis of TSWQ and teachers' perceived environmental supports for students and themselves at school indicated strongly positive associations (Pearson $r = .57$ and $.62$). The salience of family support is perhaps unsurprising as widespread stay at home and other public health emergency orders limiting social gathering likely had most teachers primarily interacting with family members (Flanagan et al., 2021).

Limitations

We acknowledge several limitations in this study, most importantly the cross-sectional data collection—limiting causal inferences. The relatively small sample size limited our statistical power to conduct additional analyses exploring stratifications and potential interactions that

might otherwise have been possible if more teachers had been surveyed. Additionally, given the single time point of survey administration, there is no information about teachers' support and wellbeing trajectories or their potential relationship. Given the convenience sampling approach utilized, there is the potential for selection bias with teachers with low wellbeing opting out. In this case, current results might artificially inflate teacher wellbeing and the strength of the association with social support for PA. Also, the SSES does not isolate co-workers from acquaintances and the current report does not evaluate actual district policies promoting (or discouraging) teacher wellbeing (Chriqui et al., 2013; Martinez et al., 2017). Conducting the surveys amidst a relatively unique period of remote schooling may have limited generalizability, although having it take place amidst a period of crisis potentially adds to its relevance in understanding the studied relationships during periods of disruptions. Future longitudinal studies should also directly measure PA and conduct formal mediation analyses. Lastly, these results are from a single geographic area in the United States, so our findings may be not generalizable to teachers in other areas.

Conclusions

Based on these findings obtained early during the COVID-19 pandemic, additional research is needed to study the relationship between teacher wellbeing and social support for PA in diverse school districts. Moreover as an additional pandemic is likely, the relationship between student wellbeing and family support for exercise is of interest as strategies are needed to combat the effects of anxiety, learning loss, or other social-emotional factors (Gordon, 2010; Roffey, 2012).

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Conflict of Interest Statement:

We have no conflicts of interest to disclose.

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Appendix A

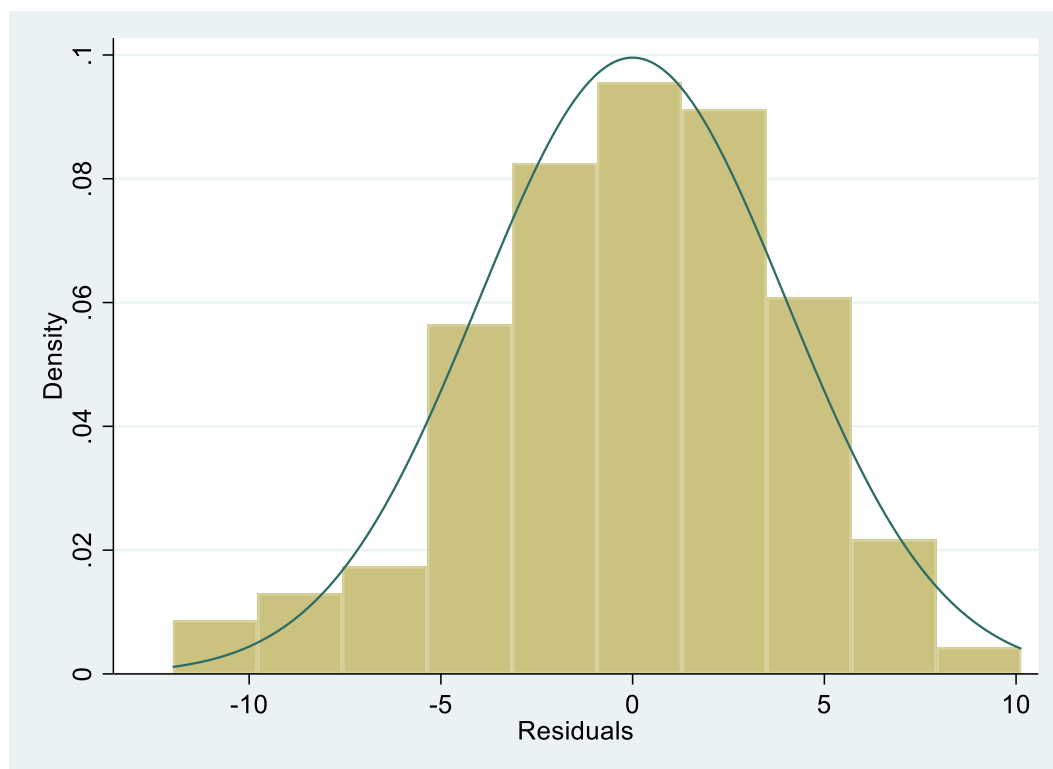


Figure A1. Histogram of Teacher Subjective Wellbeing Questionnaire (TSWQ) and family social support for exercise

A histogram of the dependent variable Teacher Subjective Wellbeing Questionnaire (TSWQ) and independent variable family social support as evidence that the errors (estimated by residuals) are normally distributed.

Table A1. Regression table for teacher wellbeing as the outcome variable and family social support as the predictor variable (n=104)

Variable	β	95% Confidence Interval	p-value
Family social support	0.31	0.04 - 0.58	<0.05
Gender			
Female	-0.11	-2.74 - 2.53	>0.05
Choose not to answer	-1.06	-6.69 - 4.56	>0.05
Race and ethnicity			
Non-white	-1.72	-4.23 - 0.79	>0.05
Education			
Master's degree & more units than required for Master's Level	0.17	-2.00 - 1.66	>0.05
Grades 6-8 & Grades 9-12	-0.45	-2.93 - 2.04	>0.05
Job performance			
Yes	-0.54	-2.51 - 1.44	>0.05
Salary			
Yes	-1.58	-9.35 - 6.19	>0.05
Years of teaching	0.04	-0.08 - 0.16	>0.05
Average class size	-0.07	-0.22 - 0.08	>0.05
Free or reduced meal program participation	0.08	-0.02 - 0.19	>0.05
$R^2 = 0.167$ Adjusted $R^2 = 0.057$ $F(12, 91) = 1.52$ $p > 0.05$			

Note: Gender reference category is male. Race and ethnicity reference category is White & Not Hispanic or Latino. Education reference category is Bachelor's degree & teaching credential. Grade level reference category is Grades K-2 & Grades 3-5. Only

1 respondent selected Grades 9-12. Job performance & Salary reference category is No. Job performance on test scores: “My district evaluates annual job performance based upon student test performance”; Salary on test scores: “My district bases teacher salary/bonus pay on student test performance”.

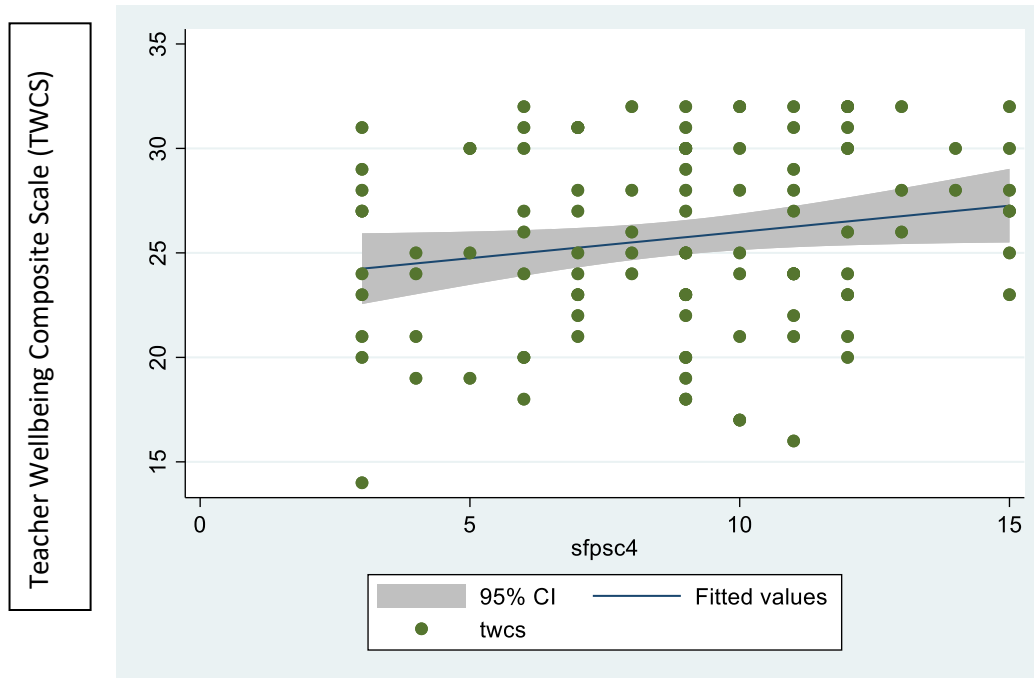


Figure A2. Scatterplot wellbeing as the as the predictor

Family social support for exercise

for the linear regression of teacher outcome variable and family social support variable

The Teacher Subjective Wellbeing Questionnaire composite scale (TWCS), score with possible range from 8-32 represented on the y-axis with family social support for exercise score (sfpsc4; range from 3 to 15) on the x-axis with 95% Confidence Interval in grey shading. A higher TWCS score indicates greater teacher positive psychological functioning at work. A higher family social support score suggests greater support from family to exercise.