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# Associations Between Social Determinants of Health, Chronic Absence From School, and Teacher Ratings of Parents' Engagement in Early Education

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## Abstract

This study examined associations between four indicators of social determinants of health (SDOH; parent education, poverty, material hardships, and child health problems), chronic school absence, and teachers' ratings of parents' engagement in their children's education. Surveys were collected from 304 parents and 26 teachers from eight Baltimore City Public Schools. Results revealed that teachers' ratings of parent engagement were consistently lower among families experiencing adverse SDOH and/or whose children were chronically absent; however, there was no significant relationship between teachers' ratings of parent engagement and child health problems. Additionally, chronic absence partially mediated the relationship between three SDOH indicators (total material hardships, parent education level, and child health problems) and teacher-rated parent engagement. Poverty was excluded from mediation analysis due to evidence of multicollinearity suppressive effects. Addressing the SDOH assessed in this study may be an effective strategy to reduce chronic absence, promote parent engagement, and foster equity in education.

## Keywords

parent involvement, kindergarten, absenteeism, child health, health disparities

Social determinants of health (SDOH) are defined by the World Health Organization (WHO) as "conditions in which people are born, grow, live, work, and age, and the wider set of forces and systems shaping the conditions of daily life" (WHO, n.d.). This broad definition spans multiple domains and includes factors such as economic stability, living conditions, education, social support systems, and access to health care. SDOH have been the subject of considerable research and have been increasingly identified for their inextricable involvement with all areas of health and wellness (Commission on Social Determinants of Health, 2008). In addition to being causal of both infectious and chronic disease, SDOH have direct effects on mental health and academic outcomes in children (Cockerham et al., 2017; Shankar et al., 2017). Furthermore, SDOH have been identified as the main cause of health inequity worldwide (WHO, n.d.).

Early childhood is of particular importance when considering the implications of SDOH as it is a sensitive and critical period for growth and development (Silbert-Flagg & Pillitteri, 2018). While early childhood education includes head start, prekindergarten, and kindergarten programs, this study focuses on kindergarten because it is the first point at which children are required by law to participate in formal education. Early childhood education presents a unique opportunity for interventions for a number of reasons. First, as considerable time is spent in school beginning in early childhood, the school environment comprises a major component of the SDOH for young children. Second, establishing positive relationships and experiences early in a child's education is associated with success in later years (Reynolds et al., 2018). Lastly, children are largely dependent on their caregivers at this age, and therefore caregivers are inextricably involved in a child's educational experience. This provides an opportunity to establish positive relationships between teachers and families (National Academies of Sciences, Engineering, and Medicine, 2016).

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Poverty and material hardships have detrimental effects on child development, and adequate progression in physical, cognitive, behavioral, and emotional health sets the stage for subsequent performance in school and later success in adulthood (Connolly & Olson, 2012; Currie & Goodman, 2020). A recent systematic review found even low levels of food insecurity to be associated with academic, emotional, and behavioral problems (Shankar et al., 2017). Material hardships and low socioeconomic status (SES) also increase the likelihood of child health problems (e.g., asthma, lead poisoning, and delayed neurocognitive development; Beck et al., 2014; Currie & Goodman, 2020; Shankar et al., 2017), which further hinder early learning via compromised physical, cognitive, and social functioning, and increased school absence (Emerson et al., 2016; Michael et al., 2015).

## *Parent Engagement and Teachers' Perceptions of Parents*

Positive school experiences can serve as a protective factor for children from low-income families (Berkowitz et al., 2017). However, mounting evidence has also demonstrated the importance of the home–school relationship. Parent engagement has consistently been associated with improved student outcomes (Castro et al., 2015). As a result, schools have allocated significant resources to increase parent engagement. The Federal Title 1 Act, which provides financial support to schools with large numbers of low-income families, requires schools to establish policies to promote parent engagement (Mapp, 2012). Additionally, Baltimore City Public Schools ("City Schools"), the district in which this study took place, named parent engagement as one of its three "pillars of excellence" for a high-quality education (Baltimore City Public Schools, 2015).

Given the importance of parent engagement for children's learning and academic success, a significant expectation is placed on parents to be involved in their child's education beginning in early childhood. Teachers' perceptions of a parent's willingness and ability to actively participate in their child's learning have substantial influence on the teacher–parent relationship. This influence is consequential, as teachers' perceptions of parents relate to their expectations and evaluations of students (Serpell & Mashburn, 2012). Furthermore, teacher–parent relationships impact both children's academic outcomes and social–behavioral functioning (Herman & Reinke, 2017; Ho & Cherng, 2018; Sheridan et al., 2017; Zulauf-McCurdy & Zinsser, 2020). However, teacher perceptions of parents' engagement are affected by factors such as SES, single parent status, and cultural differences which complicate the teacher–parent relationship (Ho & Cherng, 2018; Kurucz et al., 2020).

## *Expectations and Barriers to Parent Engagement*

Although consensus exists regarding the importance of parent engagement, there is significant variation in how it is defined and executed (Gross et al., 2022; Iruka et al., 2014). Three broad domains of parent engagement have typically been identified including school-based engagement (e.g., volunteering in the classroom, attending meetings, or serving on committees), home-based engagement (e.g., reading to the child or promoting the importance of education), and parent–teacher communication (e.g., phone, text, email, written notes, or in-person contact; Fantuzzo et al., 2013). While it has been widely acknowledged that parent engagement exists in these multiple forms and often occurs outside of the classroom, initiatives aimed at improving parent engagement and measures of their success have largely focused on school-based activities. This discrepancy persists despite limited evidence linking such activities with children's academic success (Boonk et al., 2018; Fantuzzo et al., 2013).

The concept of school-based engagement has largely grown out of middle-class values, and there is evidence that families of varying SES may hold substantially different beliefs regarding their role in their child's early learning (Iruka et al., 2014). For example, parents with lower income or less education may value their role in home-based learning, while viewing school-based activities as the role of the teacher (Lareau, 1987). Families of lower SES may also perceive power differentials which reduce both the quantity and quality of teacher–parent interaction (Baquedano-Lopez et al., 2013; Ishimaru & Takahashi, 2017). Parents who have a lower education level may not feel comfortable discussing academic matters with teachers or may avoid the classroom setting and/or conferencing (Calzada et al., 2015). Additionally, single parents and those working multiple jobs or shift work may have less flexibility in their work schedules and therefore more difficulty attending scheduled school-based activities (Baquedano-Lopez et al., 2013; Fantuzzo et al., 2013). Incongruent expectations of parent engagement can lead to ineffective parent engagement initiatives and perpetuate frustration and dissatisfaction among both teachers and parents (Calzada et al., 2015). Teachers who expect engagement in the form of classroom volunteerism or attending school-based meetings may perceive parents who are unable to be at the school as unengaged, even though the parent may be very involved in ways not visible to the teacher (Bower & Griffin, 2011).

Material hardships may be particularly disruptive to parents' abilities to engage in children's early learning as the acquisition of food, shelter, and safety take priority over less immediate needs such as attending school functions (Turnbull et al., 2014). While parents from low-income backgrounds may place great value on their child's learning, their ability to engage in the specific activities which are expected by schools are more likely to be affected by daily

crises related to lack of resources compared to families with higher incomes. Children growing up with multiple material hardships are also at greater risk for health problems related to low-resource conditions such as poor nutrition, overcrowded living situations, and poor hygiene (Beck et al., 2014; Cutts et al., 2011). Chronic health conditions such as asthma are particularly prevalent among low-income children and children of color (Beck et al., 2014; Ebell et al., 2019). The demands of managing chronic health conditions further complicate parents' ability to focus on their child's early learning.

### Chronic Absence in Early Education

Although not directly described in the literature as a form of parent engagement, school attendance in early education is the responsibility of the caregiver and therefore may be viewed by teachers as a reflection of how much parents value their child's learning. Chronic absence in early education (i.e., missing more than 10% of school days in an academic year) has a detrimental impact on students' academic performance (Ehrlich et al., 2018). However, the ability to attend school may be compromised by a multitude of factors. For example, families in districts that do not provide school bussing services may be unable to reliably transport their child to school. For families with limited resources, the competing demands of food, housing, or employment may hinder a parent's ability to prioritize school attendance. Children with chronic health problems may have lower attendance due to medical appointments, symptom exacerbations, or general poor physical functioning (Emerson et al., 2016). In light of these factors, it may be presumed that schools have little control over chronic absence; however, school outreach initiatives such as home visits and school-initiated communication with parents have been shown to increase student attendance (Sheldon, 2007).

### Research Aims and Hypotheses

Given the complex interaction between SDOH, parent engagement, and student attendance, the current norms and expectations regarding parent engagement may disadvantage families at risk for educational disparities. In a previous study, we reported that teachers' global ratings of parent engagement were not consistently related to parents' self-ratings of engagement (Gross et al., 2022), raising the question of what factors influence teachers' ratings of parent's engagement. While there is extensive research on the topics of parent engagement in education, chronic absence, and SDOH, there is less research concerning teachers' perceptions of parents. There is a gap in our understanding of what factors contribute to teachers' perceptions of parents. Considering the significant and far-reaching impact of SDOH, the purpose of this study was to investigate associations between four indicators of SDOH (material hardships, poverty, parent education, and child health problems), chronic absence, and kindergarten teachers' ratings of four domains of parents' engagement in their children's education. Specifically, teachers provided ratings of parent–teacher communication, school-based engagement, home-based engagement, and global engagement. We hypothesized that: (a) parents experiencing adverse SDOH would be rated by teachers as less engaged in their child's early learning across all four domains of parent engagement, (b) teacher ratings of parents' school-based engagement would have a stronger relationship to adverse SDOH compared to ratings of a home-based engagement or teacher–parent communication, and (c) chronic absence would mediate the relationship between adverse SDOH and all four domains of teacher-rated parent engagement. To our knowledge, this is the first study to examine chronic absence as a potential mediating factor between SDOH and teachers' ratings of parent engagement.

## Methods

### Recruitment

Data were collected as part of a larger cross-sectional study to develop a measure of parent-reported engagement in children's early education that would be relevant for families with limited resources and urban school districts serving a large proportion of students from low-income families (Gross et al., 2022). City Schools is a large urban district serving 79,187 students (76.6% African American, 13.5% Latinx, 7.6% White, and 1.0% Asian), and ~70% of City Schools are designated as Title I schools (Baltimore City Public Schools, 2015).

Schools were included in the study if they had at least two kindergarten classrooms ($M = 3.3$ classrooms per school), and the school principal consented to the research team recruiting kindergarten teachers and parents for the study. The principals of eight elementary schools meeting eligibility criteria agreed to participate. A total of 304 parents of kindergarten students in the eight schools ($n = 26$ classrooms) were recruited to participate. Parents were included if they: (a) were the parent or legal guardian of a kindergarten student enrolled in one of eight participating schools, (b) able to speak English, and (c) provided written consent to participate in the study, including permission for the research team to access their child's school attendance records and to contact their child's kindergarten teacher to complete a survey to assess engagement in their child's education.

## Measures

### Participant Demographics

Brief background forms were used to gather demographic information on both the parents and teachers. Parent

demographic characteristics included race, ethnicity, caregiver type (e.g., mother and father), marital status, employment status, material hardships, family income level, and parent education. Parents were also asked if their child had any health problems. Teacher demographics included gender, race, ethnicity, number of years teaching in the school district and at the current school, highest educational degree received, and whether or not they previously received training in parent engagement.

## Social Determinants of Health

Healthy People 2020 identifies five main categories of SDOH: economic stability, education, health and health care, neighborhood and built environment, and social and community context (Office of Disease Prevention and Health Promotion, 2020). For the purposes of this study, we measured indicators of four categories of SDOH including material hardships, poverty, parent education level, and child health problems.

*Material Hardships*. Parents reported on whether (yes/no) they had experienced any of nine distinct economic hardships in the past year including unable to pay the rent/mortgage, evicted for not paying the rent/mortgage, unable to pay the power bill, had the power turned off due to nonpayment, had the telephone turned off due to nonpayment, unable to obtain needed medical care because of the cost, unable to visit the dentist due to lack of insurance, worried about running out of food before obtaining money to buy more, or food supply ran out and did not have money to buy more. This list includes well-established indicators of material hardships that have repeatedly shown associations with a range of child health and parenting outcomes (Frank et al., 2010; Gross et al., 2019). A total hardships score (from 0 to 9) was created for each parent based on the sum of the number of parent-reported hardships. When treated as a scale, the material hardships measure has acceptable internal consistency (Cronbach's alpha = .77).

*Poverty*. Parents were asked to choose from one of six options that best represented their total annual household income based on all persons who live in their home; options included <$10,000/year, $10,000–$19,999/year, $20,000–$39,999/year, $40,000–$59,000/year, $60,000–$79,000/year, and $80,000 or more per year. Based on the 2020 U.S. federal poverty guidelines for a family of three (Assistant Secretary for Planning and Evaluation, 2020), a binary poverty variable was created such that 1 reflects < $20,000/year and was designated as living in poverty and 0 reflects ≥$20,000/year and was considered not living in poverty.

*Parent Education Level*. Parents selected their highest education level achieved from eight options: grade school, some high school, high school diploma/general education development (GED), associate degree, vocational degree, some college, bachelor's degree, and graduate degree. A binary parent education variable was created such that 1 reflected less than a high school diploma/GED and 0 reflected having a high school diploma/GED or higher. The use of a binary parent education variable is supported by research demonstrating that individuals who do not obtain a high school diploma or GED are at significantly increased risk for unemployment, financial hardship, and health problems when compared to peers who did receive a high school diploma or GED (Campbell, 2015).

*Child Health Problems*. Parents were asked whether (yes/no) their child had ever been diagnosed with any of the following physical health, developmental, or behavioral problems: asthma, attention deficit/hyperactivity disorder (ADHD), autism-related disorder, diabetes, hearing loss, high lead levels, speech delay, or another problem not listed. A binary variable was created such that 1 indicated the child had one or more health problems and 0 indicated the child had no reported health problems.

## Chronic Absence

Data on chronic absence in kindergarten were drawn from children's school attendance records. Children were identified as chronically absent if they were enrolled in school for at least 5 days and missed more than 10% of days enrolled over the entire 2018–2019 school year (Connolly & Olson, 2012). A binary variable was created where 1 = chronically absent and 0 = not chronically absent.

## Teacher-Rated Parent Engagement

To avoid overburdening teachers who were asked to complete surveys for multiple families in their classrooms, we used a brief 4-item measure of teacher ratings of parent engagement. Three of the four items on this measure were adapted from existing teacher-rated parent engagement scales (Arnold et al., 2008; Conduct Problems Prevention Research Group, 1995) to assess each of the key domains of parent engagement. The first two items measured the frequency with which (a) the teacher and parent communicated with one another about the child (by phone, email, text, in person, etc.) and (b) the parent participated in meetings or activities at the school (e.g., parent–teacher conferences, parent–teacher association meetings, workshops, volunteering in the school or classroom, and serving on committees), both using a 5-point scale ranging from 1 = *never* to 5 = *at least weekly*. The third item measured the teachers' ratings of the frequency with which the parent does things to encourage their child's positive attitude toward education (e.g., take the child to the library, read to the child, and talk with the child about what the child is learning in school), also on a 5-point scale ranging from 1 = *never* to 5 = *very often*. The fourth item, developed by the study authors, measured the teachers' ratings of the parents' overall level of engagement in their child's learning from 1 = *not at all* to 5 = *extremely*

*engaged*. While it may be argued that the global measure is summative of the other three items and therefore redundant, it is possible that there are factors that contribute to a teacher's overall perception of parent engagement that are not captured by the first three items. Identifying incongruence between the first three items and the global rating of parent engagement would highlight areas for future research. Each item was examined separately for its relationship to SDOH and chronic absence to assess whether relations among the variables vary based on the specific form of parent engagement. However, when treated as a single scale, the four items have demonstrated good internal consistency (Cronbach's alpha = .85), indicating that they are measuring a common construct. Validity is supported by evidence of concordance between these 4 items and parent-reported parent engagement has been reported elsewhere (Gross et al., 2022).

## Procedures

All procedures were approved by City Schools and the University's Institutional Review Boards. Data on parent and child characteristics and parent engagement were collected by the research team between February and June 2019. All participating teachers signed consent forms prior to parent recruitment. Parents were informed of the opportunity to participate in the study as well as the time and location of recruitment through flyers sent home with their child by the child's teacher. The research team recruited parents, obtained written consent, and administered paper–pencil surveys during school drop-off and pick-up. If interested parents were unable to take the survey at the time of recruitment, the research team arranged to administer the survey to the parent at a later date.

After reading and signing the consent form, parents completed a self-reported measure of their own engagement in their child's education (results reported elsewhere). Next, they completed the background form used in this study. After completing the surveys, parents were provided a copy of the consent form as well as a $20 gift card for participation in the study. Teachers were then contacted by the research team and asked to complete a brief demographic form and the Teacher-Rated Parent Engagement survey for each participating parent. Teachers received $5 for each survey they completed. Student attendance data were accessed from children's school records in summer 2019.

## Analytic Plan

First, independent samples *t*-tests were conducted to compare means of the four T-PE items by each of the SDOH measures (material hardships, poverty, parent education level, and child health problems). We considered differences in means of each of the T-PE items by each of nine indicators of material hardship to assess whether certain hardships had a more profound relationship with T-PE items. Next, Stata 15.1 statistical software (StataCorp, 2019) was used to conduct structural equation modeling with bootstrapping (5000 resamples) to assess for direct ($c'$) and indirect (ab) concurrent associations and the potential mediating effect of chronic absence on the relationship between material hardships, parent education level, and child health problems and the dependent variables of teacher-rated parent engagement (Cheung & Lau, 2007; Preacher & Hayes, 2004).

Multiple preliminary models were created and analyzed to evaluate the mediating effect of chronic absence. First, individual models examining relations between each of the four independent variables (total material hardships, less than high school diploma, child health problems, and poverty), the mediator of chronic absence, and each of the four outcome variables of interest (teacher–parent communication, school-based engagement, home-based engagement, and global rating of parent engagement) were conducted. Next, four additional models including all four independent variables within the same model were examined for each outcome. The models were compared to observe for multicollinearity suppressive effects and determine if any variables should be removed from the model. It was at this point the study team decided to remove poverty from the model due to evidence of multicollinearity suppressive effects and significant overlap between the measures of poverty and total material hardships. Child health problems also exhibited some multicollinearity suppression, however, the study team decided to maintain this variable within the model as it was not conceptually represented by any of the other independent variables. Results of these preliminary individual and combined models are available to readers upon request. Final models were then analyzed for each of the outcome variables using chronic absence as the mediation variable and total material hardships, less than a high school diploma, and child health problems as independent variables.

## Results

### *Descriptive Statistics for Parent and Teacher Participants*

The study included 304 parents of 316 kindergarten students. Table 1 summarizes the characteristics of parents in this study. The majority of parents were mothers. Sixty-eight percent were African American, 20.4% were White, and 10.5% were from another racial/ethnic group. Approximately 63% were not married, 27% were unemployed, 10.2% had less than a high school diploma, and 37.8% had an annual household income of <$20,000 per year. Approximately 38.5% ($n = 114$) reported experiencing one or more material hardships in the past year. The most common hardships reported included: unable to pay the

**Table 1.** Demographic Characteristics of Parents ($n = 304$).

| Characteristics | *n* (%) | *M* (*SD*) |
|---|---|---|
| Relationship to a kindergarten child | | |
| Mother | 225 (74.0) | |
| Father | 56 (18.4) | |
| Other (e.g., grandparent and aunt) | 22 (7.2) | |
| Race | | |
| African American | 208 (68.4) | |
| White | 62 (20.4) | |
| Other (Asian, American Indian, multiracial, and other) | 32 (10.5) | |
| Ethnicity | | |
| Hispanic/Latino | 16 (5.3) | |
| Not Hispanic/Latino | 286 (94.1) | |
| Education level | | |
| Less than high school diploma | 31 (10.2) | |
| High school diploma/GED | 118 (38.9) | |
| Some college/associate's degree | 79 (26.1) | |
| College/graduate degree | 75 (24.8) | |
| Employment status | | |
| Full-time | 153 (50.5) | |
| Part-time | 50 (16.5) | |
| Going to school | 19 (6.3) | |
| Not working | 81 (26.7) | |
| Annual household income | | |
| <$20,000/year | 115 (37.8) | |
| $20,000–$39,999/year | 65 (21.4) | |
| ≥$40,000/year | 115 (37.8) | |
| Unknown | 9 (3.0) | |
| Marital status | | |
| Married | 111 (36.5) | |
| Not married | 192 (63.2) | |
| Specific hardships experienced in the past 12 months | | |
| Unable to pay rent/mortgage | 41 (13.5) | |
| Evicted from home | 12 (3.9) | |
| Unable to pay gas/electricity bill | 67 (22.0) | |
| Gas/electricity turned off for nonpayment | 25 (8.2) | |
| Telephone disconnected for nonpayment | 37 (12.2) | |
| Needed to see a dentist but could not afford to | 37 (12.2) | |
| Needed to see a doctor but could not afford to | 17 (5.6) | |
| Worried about running out of food before afford to buy more | 49 (16.1) | |
| Ran out of food before obtained money to buy more | 44 (14.5) | |
| Total number of hardships in the past 12 months ($n = 296$) | | 1.1 (1.7) |
| None | 182 (61.5) | |
| One | 36 (12.2) | |
| Two | 19 (6.4) | |
| Three | 23 (7.8) | |
| Four | 22 (7.4) | |
| Five or more | 14 (4.7) | |

*Note.* *M* = means; *SD* = standard deviation; GED = general education development.

gas/electricity bill ($n = 67$, 22.0%), worried about running out of food before they could afford to buy more ($n = 49$, 16.1%), ran out of food before they obtained money to buy more ($n = 44$, 14.5%), and unable to pay for the rent or mortgage ($n = 41$, 13.5%).

Among the 316 students in this study, 28.2% ($n = 89$) had been chronically absent during kindergarten. Thirty percent ($n = 95$) had at least one health problem. The most common child health problems reported by parents included the following: asthma ($n = 55$, 17.4%), speech delay ($n = 22$, 7.0%), ADHD ($n = 13$, 4.1%), high lead levels ($n = 5$, 1.6%), and other health problems ($n = 18$, 5.7%). All eligible teachers ($n = 26$) from the eight participating schools agreed to participate in the study (see Table 2 for details). The sample was composed primarily of teachers self-identifying as female and African American. Participants had been

**Table 2.** Background Characteristics of Kindergarten Teachers ($n = 26$).

| Characteristics | *n* (%) | *M* (*SD*) |
|---|---|---|
| Gender | | |
| Female | 25 (96.2) | |
| Male | 1 (3.8) | |
| Race/ethnicity | | |
| African American | 15 (57.7) | |
| White | 10 (38.5) | |
| Asian | 1 (3.8) | |
| No. years working for City Schools | | 8.7 (5.8) |
| No. years working at current school | | 4.9 (4.3) |
| Education level | | |
| Bachelor's degree | 4 (15.4) | |
| Master's degree | 22 (84.6) | |
| No. reporting prior training in parent engagement | 14 (53.8) | |

*Note.* *M* = means; *SD* = standard deviation.

teaching in City Schools for an average of 8.7 years and teaching within their current school for an average of 4.9 years. The majority had a Master's degree and ~54% reported that they had received some prior training on parent engagement strategies.

### *Comparison of Domains of Teacher-Rated Parent Engagement by Individual SDOH Variables*

Table 3 uses a series of independent samples *t*-tests to compare means of each of the teacher-rated parent engagement items across the SDOH variables. Teachers' ratings of *parent–teacher communication* varied as a function of both poverty and chronic absence in kindergarten, with higher teacher ratings on parent–teacher communication for parents living in poverty and lower ratings for parents whose children were chronically absent. Teachers' ratings of parents' *school-based engagement* were significantly lower for parents with less than a high school diploma, who had been evicted or unable to pay for rent or mortgage, and whose child had been chronically absent. Teachers' ratings of parent's *home-based engagement* were significantly lower for parents experiencing poverty, with less than a high school diploma, and whose child had been chronically absent. Teachers' ratings of parents' *home-based engagement* were also lower for parents reporting any one of eight material hardships (representing all except having telephone disconnected for nonpayment). Teachers' *global ratings of parents' engagement* were significantly lower for parents who were experiencing poverty, with less than a high school diploma, reporting any one of nine material hardships, and who had a chronically absent child. However, teachers' global ratings of parents' engagement were unrelated to child health problems.

### *Association Between SDOH, Chronic Absence, and Individual Domains of Teacher-Rated Parent Engagement*

To determine whether chronic absence from kindergarten mediated the relationship between SDOH and teachers' ratings of parent engagement, we examined multiple mediation models testing the effects on each of the four parent engagement outcomes (*parent–teacher communication, school-based engagement, home-based engagement*, and *global parent engagement*). Table 4 reports the total, direct, and indirect effects of the four mediation models. Figure 1 displays the mediation effect of chronic absence on the *global rating of parent engagement* (model 4). Results suggest that chronic absence partially mediates relations between the independent variables of total material hardships, parents' education level, and child health problems and the four teacher-rated parent engagement outcomes. In model 1, only parents' education level had a significant indirect effect on *teacher–parent communication* through chronic absence. For the dependent variables of *school-based engagement, home-based engagement*, and *global parent engagement* (models 2–4), parent's total material hardships and education level both exhibited significant indirect effects through chronic absence. Child health problems did not exhibit a significant indirect effect on any of the dependent variables through chronic absence.

## Discussion

Teachers' perceptions of parents' engagement in their children's early learning can have significant effects on the quality of teacher–parent relationships, teachers' expectations of the student, and student outcomes (Herman & Reinke, 2017; Ho & Cherng, 2018; Sheridan et al., 2017; Zulauf-McCurdy & Zinsser, 2020). This study examined the extent to which teachers' ratings of parent engagement are associated with material hardships, poverty, parent education level, child health problems, and chronic absence from school. As hypothesized, our analysis revealed that teachers' ratings of parent engagement were consistently lower among families experiencing adverse SDOH. Specifically, teachers' global ratings of parent engagement were lower among parents with annual incomes below $20,000, who reported more material hardships, and who had less than a high school education. This study extends previous research demonstrating significant relationships between multiple domains of SDOH and teachers' perceptions of parent's engagement in their child's early education (e.g., Arnold et al., 2008; Ho & Cherng, 2018). To our knowledge, this is the first study demonstrating the role of chronic absence in these relationships.

There were notable differences in relations between SDOH and each of the four domains of parent engagement. Specifically, teachers' global ratings of parent engagement

**Table 3.** *t*-Test Analyses Comparing Means on Teacher-Reported Parent Engagement Items by SDOH.

| | Teacher–parent communication | | School-based engagement | | Home-based engagement | | Global rating of parent engagement | |
|---|---|---|---|---|---|---|---|---|
| | *M* (*SD*) | *p*-value | *M* (*SD*) | *p*-value | *M* (*SD*) | *p*-value | *M* (*SD*) | *p*-value |
| Poverty ($n = 304$) | | | | | | | | |
| Yes | 4.38 (0.79) | .002 | 3.04 (1.34) | .35 | 3.95 (0.92) | .004 | 3.71 (1.02) | .005 |
| No | 4.04 (0.97) | | 3.19 (1.32) | | 4.28 (1.00) | | 4.07 (1.10) | |
| Parent education level ($n = 304$) | | | | | | | | |
| <High school diploma | 4.00 (1.10) | .28 | 2.65 (1.28) | .03 | 3.71 (1.10) | .007 | 3.32 (1.05) | .001 |
| >High school diploma | 4.19 (0.90) | | 3.19 (1.32) | | 4.21 (0.95) | | 4.01 (1.07) | |
| Child health problems ($n = 316$) | | | | | | | | |
| Yes | 4.12 (0.93) | .46 | 3.06 (1.36) | .37 | 4.01 (1.00) | .09 | 3.77 (1.09) | .06 |
| No | 4.20 (0.92) | | 3.21 (1.32) | | 4.22 (0.98) | | 4.02 (1.09) | |
| Unable to pay rent/mortgage ($n = 301$) | | | | | | | | |
| Yes | 4.05 (1.09) | .36 | 2.68 (1.37) | .02 | 3.51 (1.03) | <.001 | 3.24 (1.04) | <.001 |
| No | 4.19 (0.89) | | 3.21 (1.31) | | 4.26 (0.93) | | 4.06 (1.11) | |
| Evicted from home ($n = 300$) | | | | | | | | |
| Yes | 3.83 (0.94) | .18 | 2.42 (1.51) | .05 | 3.08 (0.90) | <.001 | 2.67 (0.99) | <.001 |
| No | 4.19 (0.92) | | 3.18 (1.31) | | 4.20 (0.96) | | 4.01 (1.05) | |
| Unable to pay gas/electricity bill ($n = 302$) | | | | | | | | |
| Yes | 4.19 (1.03) | .85 | 2.96 (1.46) | .19 | 3.82 (1.09) | .001 | 3.49 (1.22) | <.001 |
| No | 4.17 (0.89) | | 3.20 (1.28) | | 4.27 (0.93) | | 4.07 (1.01) | |
| Gas/electricity shut off for nonpayment ($n = 301$) | | | | | | | | |
| Yes | 4.16 (0.94) | .94 | 3.15 (1.31) | .80 | 3.72 (1.02) | .02 | 3.48 (1.30) | .03 |
| No | 4.17 (0.92) | | 3.08 (1.47) | | 4.19 (0.97) | | 3.98 (1.06) | |
| Telephone disconnected for nonpayment ($n = 302$) | | | | | | | | |
| Yes | 4.27 (0.96) | .51 | 2.84 (1.44) | .14 | 3.89 (1.02) | .08 | 3.51 (1.15) | .01 |
| No | 4.16 (0.92) | | 3.18 (1.30) | | 4.19 (0.97) | | 4.00 (1.06) | |
| Needed to see a dentist but could not afford to ($n = 301$) | | | | | | | | |
| Yes | 4.24 (0.93) | .62 | 3.03 (1.28) | .59 | 3.84 (1.04) | .04 | 3.62 (1.04) | .05 |
| No | 4.16 (0.92) | | 3.15 (1.33) | | 4.20 (0.96) | | 3.98 (1.09) | |
| Needed to see a doctor but could not afford to ($n = 301$) | | | | | | | | |
| Yes | 3.94 (1.09) | .29 | 2.82 (1.38) | .30 | 3.59 (1.12) | .01 | 3.35 (1.00) | .02 |
| No | 4.19 (0.91) | | 3.17 (1.32) | | 4.19 (0.96) | | 3.98 (1.08) | |
| Worried about running out of food before afford to buy more ($n = 302$) | | | | | | | | |
| Yes | 4.29 (1.02) | .36 | 2.96 (1.35) | .29 | 3.73 (1.02) | .001 | 3.47 (1.04) | .001 |
| No | 4.15 (0.90) | | 3.18 (1.32) | | 4.24 (0.95) | | 4.04 (1.07) | |
| Ran out of food before obtained money to buy more ($n = 302$) | | | | | | | | |
| Yes | 4.07 (0.95) | .40 | 2.64 (1.26) | .006 | 3.70 (0.95) | .001 | 3.30 (0.88) | <.001 |
| No | 4.19 (0.92) | | 3.23 (1.32) | | 4.23 (0.96) | | 4.05 (1.08 | |
| Chronically absent from kindergarten ($n = 311$) | | | | | | | | |
| Yes | 3.94 (1.00) | .004 | 2.63 (1.39) | <.001 | 3.66 (1.15) | <.001 | 3.37 (1.15) | <.001 |
| No | 4.27 (0.85) | | 3.39 (1.24) | | 4.37 (0.81) | | 4.19 (0.96) | |

*Note.* SDOH = social determinants of health: *M* = means; *SD* = standard deviation.

showed significant relationships to every SDOH indicator assessed except child health problems. This is in line with prior work demonstrating relationships between teachers' perceptions of parent engagement and individual SDOH indicators, such as SES, parent education, single parent status, and minority background (e.g., Arnold et al., 2008; Ho & Cherng, 2018). In addition, global ratings of engagement aligned closely with teachers' ratings of home-based engagement which may suggest that ratings of home-based engagement weigh heavily in teachers' overall assessments of parent engagement. However, our findings did not support our second hypothesis that SDOH would be more strongly related to teachers' ratings of parents' home-based engagement than school-based engagement. Our expectation

**Table 4.** Total Effect, Direct Effect, and Indirect Effect of Four Structural Equation Models Examining Chronic Absence as a Mediator.

| | Total effect (c) | Direct effect (c′) | Indirect effect (ab) |
|---|---|---|---|
| **Model 1** | | | |
| **DV: Teacher–parent communication** | | | |
| IV1: Total material hardships | 0.01 | 0.02 | −0.02 |
| IV2: Less than high school diploma | −0.09 | 0.00 | −0.10* |
| IV3: Child health problems | −0.13 | −0.09 | −0.04 |
| **Model 2** | | | |
| **DV: School-based engagement** | | | |
| IV1: Total material hardships | −0.07 | −0.04 | −0.03** |
| IV2: Less than high school diploma | −0.45 | −0.28 | −0.19** |
| IV3: Child health problems | −0.19 | −0.11 | −0.08 |
| **Model 3** | | | |
| **DV: Home-based engagement** | | | |
| IV1: Total material hardships | −0.15*** | −0.13*** | −0.03* |
| IV2: Less than high school diploma | −0.38 | −0.22 | −0.16* |
| IV3: Child health problems | −0.18 | −0.11 | −0.07 |
| **Model 4** | | | |
| **DV: Global rating of parent engagement** | | | |
| IV1: Total material hardships | −0.18*** | −0.15*** | −0.03* |
| IV2: Less than high school diploma | −0.54** | −0.36* | −0.18* |
| IV3: Child health problems | −0.22 | −0.15 | −0.08 |

*Note.* *$p < .05$, **$p < .01$, ***$p < .001$.

was based on the assumption that school-based activities demand more resources, as they require parents to have access to reliable transportation and control over their daytime and evening schedules. It is possible that this unexpected finding stems from teachers' assumptions that poverty and material hardships could limit parents' access to books or other educational resources, or that lower education levels could limit parents' comfort with academic activities (e.g., reading to their child or helping with homework). Considering that teachers' ratings of parents' home-based engagement are inherently subjective (as home-based activities are not directly observed by the teacher) and that SDOH appear to have a more pervasive effect on teachers' ratings of home-based engagement than on school-based engagement, these findings highlight the need for a deeper understanding of factors influencing teachers' ratings of parents' home-based engagement.

Counter to our hypotheses, teachers' ratings of parent–teacher communication were unrelated to the SDOH indicators assessed in this study, with the exception of a positive relationship with poverty (i.e., teachers rated parents with incomes <$20,000 to have higher levels of parent–teacher communication). The lack of relationships to parent–teacher communication may be attributed to the widespread availability of alternative communication methods such as text, email, and other online platforms (e.g., Class Dojo), which offer a range of options for communicating with parents outside the classroom. Regarding the positive relationship with poverty, it is possible that parents experiencing poverty are making extra efforts to communicate if they are seeking additional support from teachers, or as a compensatory measure if they are unable to engage in other ways. It is notable that parent–teacher communication, a core component of parent engagement described in the literature (Sheridan et al., 2020): (a) does not show significant relationships with most SDOH indicators and (b) does not appear to weigh heavily in teachers' global ratings of parent engagement. This finding is congruent with previous research, which found that the amount of parent–teacher contact was unrelated to either teachers' perceived comfort with parents or student outcomes (Herman & Reinke, 2017; Stormont et al., 2013).

This study illustrates that material hardships and parent education are key influences on teachers' ratings of parents' engagement. This is in line with previous research indicating that teacher perceptions of parents are related to parents' level of education (Kohl et al., 2000). Our findings also are consistent with prior work showing that material hardships may be a clearer indicator of home conditions/experiences than poverty, as poverty fails to account for many nonmonetary assets (e.g., family/social support, housing, or access to transportation; Heflin, 2014; Turnbull et al., 2014). Interventions which target these SDOH may be effective access points from which to improve outcomes for those families most at risk for educational disparities.

Chronic absence from kindergarten was also linked to SDOH and teachers' ratings of parent engagement in their children's early education. In this sample, 28% of the children had missed more than 10% of school days in kindergarten. These rates are concerning, as chronic absence in early childhood education is linked with poorer academic outcomes (Ehrlich et al., 2018). Our findings also highlight how chronic absence relates to teachers' ratings of parents; teacher ratings of all four domains of parent engagement were lower among parents of children who had been chronically absent from kindergarten. This suggests that children's presence in school weighs heavily on teachers' perceptions of parents' commitment to their children's education.

To better understand specific pathways in which SDOH might be affecting teachers' ratings of parent engagement, we examined whether chronic absence from school (which tends to be more common among students from low-income

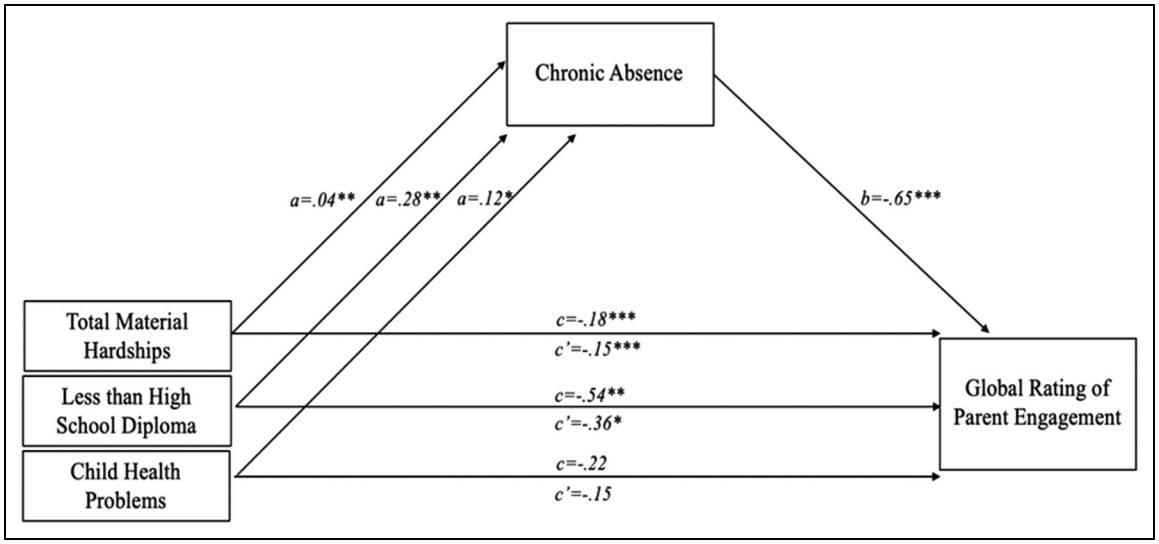


**Figure 1.** Pathway of mediation process for model 4. *$p < .05$, **$p < .01$, ***$p < .001$.

families) mediated the relationships between each of the SDOH indicators and ratings of parent engagement. Chronic absence was significantly related to all indicators of SDOH, and it partially mediated relationships between SDOH and all four parent engagement items. Teachers' lower ratings of school-based engagement among parents with less than a high school diploma or those experiencing material hardships were partially explained by their children's chronic absence. This was expected, as both school-based engagement and school attendance require families to be physically present at school—something that may be particularly challenging for low-income families who lack control over their schedules or have inconsistent access to transportation. However, what was not expected was a similar mediating effect of chronic absence on home-based engagement. This suggests that teachers may be using children's attendance as a proxy for estimating the extent to which parents' value their children's education and how much they engage in activities that support their children's learning at home. To our knowledge, the role of chronic absence in teachers' perceptions of parent engagement has not demonstrated in previous research.

The mediating effect of chronic absence explains one pathway leading to teachers' ratings of parents' engagement. Relationships identified in this study point to several SDOH as factors contributing to chronic absence and warrant further analysis. Although SDOH have powerful effects on long-term health and well-being, it is important to note that they are not immutable; their harmful consequences may be ameliorated or prevented by addressing the underlying conditions causing them. School nurses hold a unique role that positions them to assess for indicators of SDOH, counsel families, refer and coordinate with resources, and mediate relationships between parents and educators (American Nurses Association, 2021). It has also been consistently demonstrated that the presence of school nurses decreases student absences from school (Jacobsen et al., 2016; McKinley-Yoder, 2020). However, schools are not required to employ school nurses and many schools have limited funding for student health services. Policy change to provide funding for school-based health centers or community partnerships such as hospital-funded school nursing programs may be effective strategies for reducing chronic absence and improving student health (Jacobsen et al., 2016; McKinley-Yoder, 2020).

Our results also support strategies such as the community school model, in which schools offer services and supports for families to address SDOH (e.g., adding a food pantry, legal aid services, GED classes, and expanded health services). There is evidence that the community school model is associated with lower rates of chronic absence, higher rates of school attendance, and students and families feeling more connected to and supported by the school (Durham & Connolly, 2017; Olson, 2014). However, this model requires funding and coordination with a range of human services agencies and consequently presents significant challenges in both implementation and long-term sustainability.

### *Limitations*

Despite many strengths, this study is not without limitations. Due to the cross-sectional design used in this study, we are not able to identify causal relationships or examine long-term outcomes of parents' engagement in early childhood education. In addition, the specific focus on a single urban school district serving a large number of economically disadvantaged families may limit the generalizability of study findings to districts serving different populations. Future research should investigate these topics among different

populations and over time. Considering that child health problems were not related to any of the SDOH variables or parent engagement, it is possible that our measure of child health problems lacked sensitivity and therefore underrepresented the incidence of child health problems in this sample. Future research utilizing a more sensitive measure of child health problems would be valuable in exploring the relationships between child health problems, other indicators of SDOH, chronic absence, and parent engagement. This would add valuable insight into how to support at-risk families. Lastly, we did not account for parental health problems, a factor that is likely to impact a parent's ability to engage in their children's education.

## Conclusion

This study illustrates how SDOH may impact important aspects of daily life, including the way in which parents interact with their children's educational experiences. If adverse SDOH negatively impact teacher perceptions of parents' engagement, then those children are at risk for further educational disparities. Our findings demonstrate how teacher ratings of parent's engagement may be skewed by children's school attendance, a factor which is highly influenced by social contexts that impact parents' ability to get their children to school. In this way, chronic absence may be perpetuating teachers' negative perceptions of parents' engagement in their children's education among families experiencing adverse SDOH. However, this finding also points to avenues of intervention. Specifically, nurses' role as caregivers and patient/student advocates holds potential to mitigate power differentials and foster open discussion regarding families' strengths and barriers to engaging in their children's education. Nurses can also work with educators to increase understanding regarding the role of chronic absence and strategies to effectively and collaboratively work with parents to create a positive, supportive, and equitable school environment.

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### Author Contributions

Rachael E. Paulson and Deborah Gross conceived the study idea. Rachael E. Paulson, Corinne M. Plesko, Amie F. Bettencourt and Deborah Gross contributed to the design and implementation of the research. Corinne M. Plesko and Amie F. Bettencourt conducted the statistical analysis and all authors verified the analytical methods. All authors discussed the results and contributed to the writing of the manuscript.

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