

# Social determinants of health and the well-being of the early care and education workforce: the role of psychological capital

Charlotte V. Farewell, Priyanka Shreedar, Diane Brogden and Jini E. Puma

## Abstract

**Purpose** – The early care and education (ECE) workforce plays a pivotal role in shaping early childhood developmental trajectories and simultaneously experiences significant mental health disparities. The purpose of this study is to investigate how social determinants of health and external stressors are associated with the mental health of ECE staff, which represent a low-resourced segment of the workforce; how psychological capital (psycap) can mitigate these associations.

**Design/methodology/approach** – The authors administered an 89-item survey to 332 ECE staff employed in 42 Head Start centers in the USA. The authors ran three hierarchical linear regression models to analyze associations between social determinants of health, external sources of stress, psycap and potential moderation effects and mental health outcomes.

**Findings** – Individuals experiencing greater finance-related stress reported 0.15 higher scores on the depression scale and 0.20 higher scores on the anxiety scale than those experiencing less finance-related stress ( $p < 0.05$ ). Individuals experiencing greater work-related stress reported 1.26 more days of poorer mental health in the past month than those experiencing less work-related stress ( $p < 0.01$ ). After controlling for all sociodemographic variables and sources of stress, psycap was significantly and negatively associated with depressive symptomology ( $b$ -weight =  $-0.02$ ,  $p < 0.01$ ) and the number of poor mental health days reported in the past month ( $b$ -weight =  $-0.13$ ,  $p < 0.05$ ). Moderation models suggest that higher levels of psycap may mitigate the association between work-related stress and the number of poor mental health days reported in the past month ( $b$ -weight =  $-0.06$ ,  $p = 0.02$ ).

**Originality/value** – The implications of these findings suggest a need for policy change to mitigate social determinants of health and promote pay equity and multi-level interventions that target workplace-related stressors and psycap to combat poor mental health of the ECE workforce.

**Keywords** Worker well-being, Depression, Anxiety, Social determinants of health, Mental health, Psychological capital

**Paper type** Research paper

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## Introduction

Social determinants of health, which include the social and environmental context in which individuals live, significantly impact mental health and well-being-related outcomes (Cross-Denny and Robinson, 2017). For example, individuals living in poverty are 1.5–3 times more likely to experience depression and anxiety (Ridley *et al.*, 2020). A constellation of factors, including education, income, race, gender and class may interact to differentially influence these health disparities (Assari, 2017). It is critical to explore the intersection of these contextual risk factors with respect to depression and anxiety because of the high global prevalence of these disorders; the World Health Organization estimated that, in 2016, depression impacted over 350 million people (~19%) and less than half of these individuals were receiving treatment (Evans-Lacko *et al.*, 2018; WHO, 2017). Additionally, a recent systematic review estimated the prevalence of anxiety disorder between 3.8% and 25%

Received 14 September 2023  
Revised 21 December 2023  
Accepted 7 January 2024

**Funding details:** This work was supported by Administration for Children and Families (90YR012902).

**Disclosure statement:** The authors declare that they have no conflict of interest.

**Data availability statement:** Data is available from the authors upon request.

worldwide (Remes *et al.*, 2016). To mitigate the prevalence of these debilitating disorders, expanding our understanding of how these social determinants of health can be addressed to promote well-being, particularly among vulnerable groups, is needed.

Higher rates of depression have been found in females, younger individuals, people of color and individuals of Hispanic ethnicity (Califf *et al.*, 2022). Measures of socioeconomic disadvantage, including lower levels of education, were also found to be associated with a higher risk for experiencing elevated depressive symptomology (Califf *et al.*, 2022). Similarly, data from a large global study found that the risk of anxiety disorder was higher among females, younger individuals and individuals facing socioeconomic disadvantage (Kwong *et al.*, 2021). Stress related to many of these social determinants (e.g. lack of finances) is also highly correlated with depression and anxiety (Guan *et al.*, 2022) and people of color experience disproportionately high rates of these external stressors compared to white individuals in the USA (Rosenthal *et al.*, 2020). Finally, geographical location may be associated with mental health outcomes; a recent 2017 study found that the risk for serious mental illness was higher in cities than in rural areas (Gruebner *et al.*, 2017). However, contradictory evidence suggested that the prevalence of depression was significantly higher in residents of rural areas than urban areas (Probst *et al.*, 2006).

Among adults in the workforce, perceived work-related stress may be an additional and significant contributor to poor well-being (Marais-Opperman *et al.*, 2021). Individuals working in inherently stressful professions may be at greater risk for experiencing depression and anxiety. Throughout the USA, approximately 2 million adults are paid to care for and educate 10 million children between birth and age five every day (Whitebook *et al.*, 2018). The early care and education (ECE) workforce play a pivotal role in promoting high quality relationships with children in their care and shaping developmental trajectories (Gomez *et al.*, 2015). Despite the importance of the role ECE educators play in our society, both in educating the future workforce and buffering the impact of trauma by promoting resilience for children and families, approximately 46% of the ECE workforce receives public assistance (Whitebook *et al.*, 2014). Additionally, a systematic review of 30 nationwide studies found that ECE staff are at a high risk for poor psychological, emotional and physical well-being (Cumming, 2017). For instance, the ECE workforce has a higher prevalence of depression and stress than the general population (Lessard *et al.*, 2020). Past studies suggest that poor mental health outcomes may be particularly pronounced among ECE staff working with low-resourced populations such as Head Start centers (McMullen *et al.*, 2020).

A constellation of modifiable psychological factors may buffer associations between many of these social determinants of health and well-being of the ECE workforce. Psychological capital (psycap) is a composition of psychological resources characterized by having the confidence (self-efficacy) to take on challenging tasks, making positive attributions (optimism) about the likelihood of success, being determined to achieve goals to succeed (hope) and persevering in the face of difficulties (resilience) (Luthans and Youssef-Morgan, 2017). Interventions that bolster psycap can strengthen positive interactions with the environment and is especially critical in shaping stress appraisals (coping behaviors) to support an adaptive coping process (Rabenu *et al.*, 2017). In organizational and occupational health settings, psycap has been shown to be positively related to job satisfaction, job engagement and mental health and negatively related to stress and substance use (Avey *et al.*, 2009; Rabenu *et al.*, 2017; Youssef-Morgan and Luthans, 2015). The potential role of psycap in buffering poor mental health outcomes among the ECE workforce who are exposed to significant social inequities has yet to be explored.

Current workforce interventions often target a singular psychological resource (e.g. mindfulness). As resources tend to interact and collectively impact mental health and well-being, a “shotgun” approach in which workforce well-being programs provide opportunities to practice cultivating *multiple* resources may be more effective than focusing on one

particular resource ([Hobfoll, 2002, 2011](#)). Therefore, the purpose of this study was to investigate how social determinants of health, stress associated with these social determinants and psycap were associated with mental health outcomes among ECE educators, which represent a low-resourced and critical segment of the workforce. Findings will inform the development of tailored organizational-level interventions in ECE settings to support ECE educators in the acquisition of psychological resources thus translating to improved mental health and well-being of the ECE workforce.

## Methods

### *Community setting*

This study targeted ECE staff employed in 42 Head Start centers representing 5 large Head Start agencies located in 3 urban counties and 6 rural counties of Colorado in the USA. Head Start settings are federally funded preschool programs in the USA which provides free care to low-income families with children 3–5 years of age and often provide care for the highest need children in the country. According to 2019 data, about 17% of children residing in the service area covered by Agency #1 were living in poverty and 30% of families were Hispanic. Agency #2 represents a region that is home to over 36,000 children from birth to five, among the highest rates of young children in any county in Colorado. About half of the child population is Hispanic, and children under 6 have a poverty rate almost twice as high as that for all residents, with 1 in 6 young children (16%) living below the poverty line [[Colorado Health Statistics Region \(HSR\), 2017](#)]. Agencies #3 and #4 serve preschool-aged children in 8 locations encompassing one large urban region. Approximately 16% of children are Hispanic and 7% of families are living in poverty. Finally, Agency #5 serves 6 rural counties comprised of approximately 40% Hispanic residents and approximately a quarter of families are living in poverty ([City of Lakewood, 2022](#)). Though the estimated total number of staff across these five agencies is 478, both the number of centers and staff are highly variable from year to year due to staff turnover and child enrollment [[Colorado Health Statistics Region \(HSR\), 2017](#)].

### *Procedures*

Between November 2021 and January 2022, the study consent and survey were administered through Research Electronic Data Capture (REDCap) hosted at the University of Colorado, Anschutz Medical Campus ([Harris et al., 2009](#)). REDCap is a secure, Web-based application designed to support data capture for research studies. Individualized electronic links were distributed to all staff employed at the five partner agencies through longstanding community-academic partnerships. Participants reviewed the informed consent form describing the purpose of the study, criteria for participation, confidentiality measures, incentive details and contact information for the investigators. Agreement to participate was confirmed by electronically signing and clicking on a “continue” button that directed users to the survey. Up to three reminders were sent every five days to participants who had yet to complete the survey. After completing the 20-minute survey, \$20 electronic gift card incentives were distributed within 3-weeks of survey completion. All procedures were approved by the Colorado Multiple Institutional Review Board (IRB #: 21–4662).

### *Instruments*

The survey instrument comprised 89-items and included validated scales related to mental health outcomes, work-and stress-related domains and sociodemographic variables. Social determinants of health were explored as predictors and all variables with sufficient variability were included in the final regression models. For example, gender was not included in our models because 94% of the sample was female. Demographic variables were coded for analysis as follows: age [45 years or older (0), 30–44 years of age (1),

18–29 years of age (2)], education [college degree (0), less than a college degree (1)], ethnicity [Hispanic (0), Non-Hispanic (1)], race [nonwhite (0), white (1)] and geographical location [urban (0), rural (1)] were included as categorical variables in all models. Total household income was modeled as a continuous variable.

Sources of external stressors were assessed using four, one-item questions. Individuals were asked how often they experienced stress with regard to health, finances, family or social relationships and work. Responses were captured on a seven-item Likert scale ranging from never (0) to always/everyday (6). Psyscap was measured using the Psychological Capital Questionnaire (PCQ), which is a validated instrument used to measure each of psyscap's four psychological resources (i.e. 4 items for hope, 3 for efficacy, 3 for resilience and 2 for optimism). The PCQ-12 is appropriate for use across cultures, as evidenced by the number of languages to which it has been translated to date [including Spanish (León-Pérez *et al.*, 2017)] and measurement invariance across numerous cultures and low-and high-income countries has been supported (Luthans *et al.*, 2007; Wernsing, 2014). Two of the three outcome variables, depression and anxiety, were assessed using the Patient Health Questionnaire (PHQ-8) and the Generalized Anxiety Disorder (GAD-7) Scale. The PHQ-8 is a reliable and valid, brief 8-item measure of depression ( $\alpha = 0.82$ ) (Kroenke *et al.*, 2009). The GAD-7 is a reliable and valid, brief 7-item measure of anxiety ( $\alpha = 0.92$ ) (Spitzer *et al.*, 2006). Responses were retained as continuous variables instead of dichotomizing because our primary research question was focused on exploring risk and protective factors associated with poorer mental health outcomes (higher scores on depression and anxiety scales) rather than the presence or the absence of depression/anxiety symptomology. Our third outcome variable, the number of poor mental health days in the past month was assessed through a one-item question:

Q1. Now, thinking about your mental health which includes stress, depression, anxiety and problems with emotions, during the past 30 days, for how many days was your mental health not good?

## Data analysis

All data were exported from REDCap into SPSS Version 28.0 for analyses (IBM Corp, 2021). We ran frequencies and descriptive statistics for all variables and correlations with all continuous variables. Missing data was examined for all variables in the models. Because all key variables had less than 10% missing data and data were missing completely at random [ $\chi^2(71) = 63.91, p = 0.71$ ], listwise deletion was used in all analyses. Though measurement of psyscap has been validated in the general population (Lorenz *et al.*, 2016; Platania and Paolillo, 2022), we investigated the internal consistency of the PCQ-12, as psyscap has never been explored among the ECE workforce. Next, three hierarchical linear regression models were run to analyze associations between social determinants of health (Block 1), external sources of stress associated with social determinants of health (Block 2), psyscap (Block 3) and depression scores, anxiety scores and the number of poor mental health days in the past month. Before models were run, all statistical assumptions were tested and were met and outliers were identified and investigated. Significant continuous predictor variables and psyscap from Block 3 were mean centered and interaction terms were created to explore how psyscap may buffer negative exposures and promote mental health outcomes. These additional predictors were added to Block 4 of all three regression models. Unstandardized coefficients, standard errors,  $p$ -values and adjusted  $R^2$  values are reported for all linear regression models. Alpha ( $\alpha$ ) was set at 0.05.

## Results

Table 1 displays demographic characteristics of the sample ( $n = 332$ ). Most of the sample was female (94%). Approximately two thirds of the sample (69%) was white, 7% was black,

**Table 1** Participant demographics (*n* = 332)

<i>Gender</i>		
Male	20	6.6%
Female	284	93.4%
<i>Race</i>		
White	229	69.0%
Black	24	7.2%
American Indian	6	1.8%
Asian	6	1.8%
More than one	8	2.4%
Other	31	9.3%
<i>Ethnicity</i>		
Hispanic	137	45.4%
Non-Hispanic	165	54.6%
<i>Age</i>		
18–29	70	22.9%
30–44	118	38.6%
45–64	105	34.3%
65+	13	4.2%
<i>Job title</i>		
Lead teacher	78	23.5%
Assistant teacher	68	20.5%
Classroom aide/para-professional	9	2.7%
Education supervisor/manager/coordinator	15	4.5%
Family service worker/support team	36	10.8%
Director	12	3.6%
Manager (e.g. center, content area, fiscal)	5	1.5%
Nurse	3	0.9%
Mental health worker	4	1.2%
Contract worker, coach or mentor	11	3.3%
Health and/or nutrition services	7	2.1%
Administrator	5	1.5%
Facilities (e.g. cook, bus driver, custodian maintenance)	22	6.6%
Home visitor	2	0.6%
Other, please specify	10	3.0%
<i>Education</i>		
No college	21	6.9%
Some college	117	38.2%
College degree	168	54.9%
<i>Geographical location</i>		
Urban	223	67.2%
Rural	109	32.8%
<i>Household income</i>		
<\$20,000	22	7.3%
\$20,000–\$34,999	65	21.7%
\$35,000–\$49,999	72	24.0%
\$50,000–\$74,999	54	18.0%
\$75,000–\$99,999	38	12.7%
\$100,000–\$149,999	32	10.7%
\$150,000–\$200,000	12	4.0%
>\$200,000	5	1.7%

Source: Table by authors

2% was American Indian, 2% was Asian, 2% reported more than one race and 9% reported their race as “Other”. About half the sample (45.4%) was Hispanic. Just under a quarter (23%) of participants were between 18 and 29 years of age, 39% were between 30 and 44 years of age, 34% were between 45 and 64 years of age and 4% were over 65 years of

age. Just over half of the sample had a college degree (55%) and 53% of the sample reported a total household income of less than US\$50,000. As a comparison, according to the 2022 census, real median household income in the USA was \$74,580. Two thirds of the sample was working in urban areas (67.2%) while 1/3 of the sample was working in rural areas (32.8%).

Table 2 displays correlations between all key continuous variables included in the final models. Household income was significantly and negatively correlated with sources of stress related to finances and relationships ( $r = -0.28$ ,  $p < 0.01$ ;  $r = -0.15$ ,  $p < 0.05$ , respectively), depression scores ( $r = -0.14$ ,  $p < 0.05$ ) and anxiety scores ( $r = -0.15$ ,  $p < 0.01$ ) and significantly and positively correlated with psychological capital ( $r = 0.17$ ,  $p < 0.01$ ). All four sources of stress were significantly and positively correlated with depression scores, anxiety scores and the number of poor mental health days in the past month ( $r$  ranges from 0.29 to 0.41, all  $p < 0.01$ ). Pscap ( $\alpha = 0.93$ ) was significantly and negatively correlated with depression scores ( $r = -0.30$ ,  $p < 0.01$ ), anxiety scores ( $r = -0.21$ ,  $p < 0.01$ ) and the number of poor mental health days in the past month ( $r = -0.21$ ,  $p < 0.01$ ). Finally, strong, positive correlations existed between depression and anxiety scores and the number of poor mental health days reported in the past month ( $r = 0.60$ ,  $r = 0.53$ , respectively;  $p < 0.01$ ).

Results from three hierarchical regression models are displayed in Table 3. Sociodemographic factors were statistically significantly associated with depression and anxiety. Sources of external stressors and pscap were statistically significantly associated with all three outcomes in the final models. Model 1 displays findings from a hierarchical linear regression model of sociodemographic factors [Block 1:  $r^2 = 0.08$ ,  $F(7, 147) = 2.06$ ,  $p = 0.05$ ], sources of external stressors [Block 2:  $r^2 = 0.23$ ,  $F(11, 170) = 4.71$ ,  $p < 0.01$ ] and pscap [Block 3:  $r^2 = 0.26$ ,  $F(12, 169) = 5.01$ ,  $p < 0.01$ ] predicting depressive symptomology. Model 2 displays findings from a hierarchical linear regression model of sociodemographic factors [Block 1:  $r^2 = 0.09$ ,  $F(7, 176) = 2.48$ ,  $p = 0.02$ ], sources of external stressors [Block 2:  $r^2 = 0.30$ ,  $F(11, 172) = 6.78$ ,  $p < 0.01$ ] and pscap [Block 3:  $r^2 = 0.31$ ,  $F(12, 171) = 6.34$ ,  $p < 0.01$ ] predicting anxiety symptomology. Model 3 displays findings from a hierarchical linear regression model of sociodemographic factors [Block 1:  $r^2 = 0.06$ ,  $F(7, 171) = 1.47$ ,  $p = 0.18$ ], sources of external stressors [Block 2:  $r^2 = 0.30$ ,  $F(11, 167) = 6.58$ ,  $p < 0.01$ ] and pscap [Block 3:  $r^2 = 0.33$ ,  $F(12, 166) = 6.69$ ,  $p < 0.01$ ] predicting the number of poor mental health days reported in the past month.

In the full models (see Block 3), younger age was associated with higher depression scores, anxiety scores and the number of poor mental health days reported in the past month ( $p < 0.05$ ). For example, on average, individuals under 30 years of age reported 2.85 more days of poorer mental health in the past month than those 45 years of age or older ( $p < 0.05$ ). Ethnicity, race, education, location and total household income were not statistically

**Table 2** Bivariate analyses of all continuous variables included in regression models

	1	2	3	4	5	6	7	8	9
1 Total household income	—								
2 Source of stress: health	−0.08	—							
3 Source of stress: finances	−0.28**	0.45**	—						
4 Source of stress: relationships	−0.15*	0.50**	0.59**	—					
5 Source of stress: work	−0.02	0.41**	0.43**	0.45**	—				
6 Psychological capital	0.17**	−0.08	−0.13*	−0.14*	−0.26**	—			
7 Depression	−0.14*	0.29**	0.32**	0.37**	0.34**	−0.30**	—		
8 Anxiety	−0.15**	0.32**	0.39**	0.37**	0.39**	−0.21**	0.68**	—	
9 Poor mental health days	−0.05	0.35**	0.32**	0.33**	0.41**	−0.21**	0.60**	0.53**	—

Notes: \* $p < 0.05$ ; \*\* $p < 0.01$

Source: Table by authors

**Table 3** Hierarchical linear regression models predicting depression, anxiety and the number of poor mental health days reported in the past month

Outcome	Model 1: Depression				Model 2: Anxiety				Model 3: Poor mental health days			
	R-square	Adjusted R-square	P-value change	R-square	Adjusted R-square	P-value change	R-square	Adjusted R-square	R-square	Adjusted R-square	P-value change	P-value
Block 1	0.08	0.04	0.05	0.09	0.05	0.02	0.06	0.02	0.06	0.02	0.18	0.18
Block 2	0.23	0.18	< 0.01	0.30	0.26	< 0.01	0.30	0.26	0.30	0.26	< 0.01	< 0.01
Block 3 (final model)	0.26	0.21	0.01	0.31	0.26	0.24	0.33	0.28	0.33	0.28	0.02	0.02
Block 4 (moderation)	0.26	0.21	0.60	—	—	—	0.35	0.30	0.35	0.30	0.02	0.02
Final model (Block 3)												
Constant												
Age												
45 years or older (ref)		0.81	0.69		−0.12	0.76		0.80		0.80	4.09	4.09
30–44 years		—	—		—	—		—		—	—	—
Less than 30 years		0.39	0.26		0.61*	0.27		1.60		1.60	1.49	1.49
Hispanic (ref)		0.41*	0.20		0.35	0.21		2.85*		2.85*	1.17	1.17
Non-Hispanic		—	—		—	—		—		—	—	—
Non-white (ref)		−0.06	0.19		−0.02	0.20		−1.22		−1.22	1.13	1.13
White		—	—		—	—		—		—	—	—
College degree (ref)		−0.09	0.23		0.13	0.24		0.15		0.15	1.34	1.34
No college degree		—	—		—	—		—		—	—	—
Urban (ref)		0.02	0.20		−0.15	0.21		−0.01		−0.01	1.15	1.15
Rural		—	—		—	—		—		—	—	—
Total household income		−0.08	0.25		−0.05	0.26		−0.73		−0.73	1.44	1.44
Sources of Stress		−0.01	0.07		−0.05	0.07		0.42		0.42	0.39	0.39
Health		0.06	0.07		0.11	0.07		0.48		0.48	0.41	0.41
Finances		0.15*	0.07		0.20**	0.07		0.70		0.70	0.39	0.39
Relationships		0.09	0.07		0.09	0.08		0.51		0.51	0.43	0.43
Work		0.08	0.07		0.12	0.07		1.26**		1.26**	0.37	0.37
Psychological capital		−0.02**	0.01		−0.01	0.01		−0.13*		−0.13*	0.06	0.06

Notes: Ref = Reference category; \* $p < 0.05$ ; \*\* $p < 0.01$

Source: Table by authors



significantly related to any of the outcomes in the full models. Sources of stress related to finances, on average, contributed to poorer mental health; individuals experiencing greater stress related to finances reported 0.15 higher scores on the PHQ-8 and 0.20 higher scores on the GAD-7 than individuals experiencing less stress related to finances ( $p < 0.05$ ). Individuals experiencing greater stress related to work reported 1.26 more days of poorer mental health in the past month than those experiencing less work stress ( $p < 0.01$ ). After controlling for all sociodemographic variables and external sources of stress, psycap was significantly and negatively associated with depressive symptomology ( $b$ -weight =  $-0.02$ ,  $p < 0.01$ ) and the number of poor mental health days reported in the past month ( $b$ -weight =  $-0.13$ ,  $p < 0.05$ ).

Moderation models were investigated, and interaction terms of significant predictor variables were added to Block 4 for Model 1 (predicting depression) and Model 3 (predicting the number of poor mental health days); the interaction term between psycap and stress related to finances was not significantly associated with depressive symptomology ( $b$ -weight =  $0.00$ ,  $p = 0.60$ ). However, the interaction term between psycap and work-related stress was significant suggesting that higher levels of psycap may mitigate the association between work-related stress and the number of poor mental health days reported in the past month ( $b$ -weight =  $-0.06$ ,  $p = 0.02$ ). The addition of Block 4 to Model 3 also increased the amount of predicted overall variance in the number of poor mental health days reported in the past month [ $r^2 = 0.35$ ,  $F(13, 165) = 6.80$ ,  $p < 0.01$ ].

## Discussion

The primary purpose of this study was to investigate how psycap (i.e. hope, optimism, resilience and self-efficacy) may buffer associations between social determinants of health, and stressors associated with social determinants of health and mental health outcomes among the ECE workforce working in Head Start settings. Investigating protective factors that may support the well-being of ECE educators is imperative; for example, a recent study found that 37% of childcare workers reported clinical levels of depression which is significantly higher than the general population (Linnan *et al.*, 2017). Psycap is a malleable construct that can be targeted by intervention to promote mental health and well-being (Luthans and Youssef-Morgan, 2017). Findings suggest that fostering psycap of ECE educators may help to mitigate external stress experiences, thus translating to better mental health and fewer reported poor mental health days.

In our sample, an association was identified between age and the three mental health-related outcomes (i.e. depression scores, anxiety scores and the number of poor mental health days reported in the past month). These data are supported by previous findings which indicate that older age among ECE educators was protective against burnout (Farewell *et al.*, 2023; Marinković *et al.*, 2019) and past literature indicates a strong and positive correlation between burnout and depression among educators (Capone *et al.*, 2019; Schonfeld and Bianchi, 2016). Additionally, one study found that as ECE educator age increased, emotional exhaustion significantly decreased which further supports our findings (Løvgren, 2016). Another study that further reinforces this association found that younger teachers were more likely to experience anxiety related to economic challenges compared to older teachers, but that this anxiety was comparable across all other sociodemographic categories (Dizon-Ross *et al.*, 2019). Studies have hypothesized that coping strategies may vary by teacher age and that younger teachers may cope with stress by working more and using fewer sick days, thus perpetuating mental health challenges among younger individuals (Penning, 2018).

Racial discrimination is a notable social determinant that can drive inequities in health across racial and ethnic groups. While extensive research indicates that people of color experience disproportionately high rates of external stressors and depression in the general population (Califf *et al.*, 2022; Rosenthal *et al.*, 2020) which may lead to higher turnover



among people of color specifically in the teaching profession (Simon and Johnson, 2015; Steiner and Woo, 2021), this study did not find a relationship between race and ethnicity and mental health outcomes. This contradicts findings from a recent 2022 nationally representative survey of K-12 teachers and principals which revealed that one-third of Hispanic or Latino teachers reported experiencing symptoms of depression in comparison to a quarter of non-Hispanic or Latino teachers (Steiner *et al.*, 2022). The lack of association between these factors in our sample may be attributed to the demographic breakdown in which approximately two thirds of the ECE educators sampled were white (69%), as well as the collapsed dichotomous race and ethnicity variables used in our final models.

Alternatively, these findings may suggest that experiencing specific sources of stress related to finance and work may be greater contributors to poor mental health and well-being outcomes above and beyond race, ethnicity and associated discrimination experiences in this sample of the ECE workforce. Specifically with respect to depression and anxiety symptomology, stress related to finances may be particularly detrimental. Childcare workers are among the lowest wage workers in the USA (Linnan *et al.*, 2017). Working conditions in ECE settings, and specifically insufficient pay, may lead to excessive financial burden and mental and physical health disparities (Batt *et al.*, 2022; Otten *et al.*, 2019; Whitebook *et al.*, 2014). For example, a study of 1,640 childcare providers and early educators linked both lower salaries and additional workplace demands to elevated depressive symptoms (Roberts *et al.*, 2019). It is important to note that these financial stressors were further exacerbated by the COVID-19 pandemic (Batt *et al.*, 2022; Lau *et al.*, 2022), which was impacting the workforce during the time these data were collected.

Stressors related to work were significantly associated with the number of poor mental health days reported in the past month. The relationship between work stress (e.g. workload, staffing concerns, lack of job control) and poor mental health outcomes among the ECE workforce has been identified in numerous studies (Farewell *et al.*, 2022; Linnan *et al.*, 2017; Schaack *et al.*, 2020; Tebben *et al.*, 2021). This stress may be further amplified by negative interactions with others in the workplace and interpersonal conflicts with colleagues among ECE educators (Tebben *et al.*, 2021). One recent study found significant relationships between poor mental health and absenteeism among ECE educators suggesting that buffering work-related stressors is necessary to not only promote the well-being of the workforce but also improve the quality of care provided in these settings (Peele and Wolf, 2021). Improved quality of care translates to better development outcomes for young children throughout the first five years of life thus establishing the foundations for healthy trajectories throughout the life course (Felfe and Lalive, 2018; Gomez *et al.*, 2015).

Within the ECE workforce, psycap may mitigate depressive symptomology and the number of poor mental health days above and beyond the impact of social determinants and external sources of stress. In the general population including low-resourced communities, studies have found that psycap is significantly associated with decreases in stress, anxiety and depression and overall well-being (Luthans and Youssef-Morgan, 2017; Rahimnia *et al.*, 2013). Specifically, among teachers, psycap has been found to be protective with respect to mitigating stress, anxiety and burnout and promoting job engagement and overall satisfaction (Demir, 2018). Psycap may also buffer the association between work-related stress and the number of poor mental health days reported in the past month. Though few studies have investigated the role of psycap in mitigating job-related stressors and depression specifically among the ECE workforce, results from two studies with physicians suggest that psycap mediated the relationship between occupational stress and depression (Liu *et al.*, 2012; Shen *et al.*, 2014). Another study among elementary school teachers found that psycap moderated associations between emotional labor (conceptualized similarly to job-related stress) and job satisfaction (Cheung *et al.*, 2011). Job satisfaction and the number of poor mental health days reported in the past month are positively and significantly correlated (Travers and Cooper, 2018). Psycap interventions

(PCIs) implemented within the ECE workforce may help to buffer the negative repercussions of these elevated job stressors and foster well-being among this important segment of the workforce (Lupşa *et al.*, 2020). This will not only translate to healthier teachers, but in turn, will impact the quality of care provided in ECE settings (Cumming, 2017).

Though this study has many strengths including the sample size and innovation of psycap application to the ECE workforce, limitations exist. The data is cross-sectional thus limiting our interpretation of directionality and causality. Additionally, all measures used in analyses though validated, were self-reported. Finally, the limited variability of race in our sample impacted our ability to investigate differences in outcome measures by varied racial groups; we collapsed race into white versus non-white for our final analyses due to small sample sizes in the various racial categories. Studies with ECE staff that are representative of more varied racial and ethnic identities are needed to better understand the relationship between this social determinant and well-being outcomes among the ECE workforce. It is also important to note that the COVID-19 pandemic had a significant impact on the mental health of the workforce and therefore, the mental health challenges faced by ECE staff may have been elevated during this study.

The implications of these findings are significant and suggest a need for multi-level interventions that target workplace-related stressors as well as psychological resources (psycap) to combat depression and poor mental health of ECE staff. PCIs are evidence-based approaches that bolster psycap and positively impact associated outcomes including emotional exhaustion, life satisfaction, depression and well-being. PCIs target hope, confidence, self-efficacy and resilience using relevant theoretical frameworks and evidence-based strategies. For example, the *self-efficacy* inputs in PCIs largely draw from Bandura's widely recognized taxonomy of sources of efficacy which include the following:

- task mastery or success;
- modeling or vicarious learning;
- social persuasion and positive feedback; and
- physiological and/or psychological arousal.

PCIs focus on the role that goal-orientation and framing plays in building efficacy (Bandura *et al.*, 1999). A recent meta-analysis evaluated the effectiveness of individual-level PCIs and found small to medium, significant effects for psycap constructs and well-being outcomes among diverse segments of the workforce (Lupşa *et al.*, 2020). However, PCIs have primarily been tested in large, organizational settings with employee and student populations (Dello Russo and Stoykova, 2015; Lupşa *et al.*, 2020; Luthans *et al.*, 2008); there are fewer applications to the teaching profession and even fewer that have studied the implementation of PCIs with the ECE workforce. These interventions are simple, cost-effective and can be conducted by lay community members; hence, these interventions may be ideally suited to help fill the gap in access to care and contribute to scaling-up of mental health services to increase reach and impact among low-resourced populations such as those working in ECE settings (Hendriks *et al.*, 2019).

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