

BMJ Open Overall and work-related well-being of teachers in socially disadvantaged schools: a population-based study of French teachers

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ABSTRACT

Objectives As a human service profession, teaching presents specific risk factors that could be intensified in socially disadvantaged schools and, ultimately, impact the service quality. The aim of the present study was to evaluate the association between school socioeconomic status and teachers' well-being.

Design Population-based postal survey 'Teachers' Quality of Life' (MGEN Foundation for Public Health/French Ministry of Education; 2013). To categorise the school socioeconomic status, we used the 'Education Priority Area (EPA)' administrative classification, which is chiefly based on the proportion of underprivileged students and is available for primary and lower secondary state schools.

Participants In-service French teachers randomly selected from among the teaching staff administrative list of the French Ministry of Education after stratification by sex, age and type of school.

Outcome measures Indicators of well-being at work included a question on job satisfaction, job difficulty evolution and the Maslach Burnout Inventory. The short version of the WHO Quality of Life questionnaire was used to evaluate overall well-being. Among primary and lower secondary school teachers, we evaluated cross-sectional associations between school EPA status and indicators of well-being, using logistic or linear regressions stratified by school level and adjusted for sociodemographic and work-related characteristics.

Results In the adjusted models, there was no significant difference in work-related well-being between teachers in EPA and non-EPA schools, both in primary school (n=154 vs n=788) and in lower secondary school (n=113 vs n=452). Regarding overall well-being, the only significant differences were seen among primary school teachers, with teachers in EPA schools reporting a worse perception of physical health and living environment than teachers in non-EPA schools.

Conclusion Using a representative sample of French teachers, we did not observe substantial differences in work-related well-being between teachers in EPA and non-EPA schools.

BACKGROUND

Human service professionals, such as teachers, health professionals or social workers, are characterised by interactions in

Strengths and limitations of this study

- Representative sample of in-service French teachers in primary and lower secondary state schools.
- Complementary indicators related to well-being at work, including job satisfaction, the evolution of job difficulty and burnout symptomatology.
- Self-reported measures of well-being which, although validated, may include self-presentation biases.
- The cross-sectional nature of the study precludes causation analysis.

which the employee provides the public with educational, health or social services. Such an interface is known to be a potential source of affective and stress-related disorders.^{1 2} When the public comes from a socially disadvantaged background, the interaction may be even more challenging, both technically and emotionally, and may have long-term deleterious effects on the human service worker's health.³

For teachers specifically, schools with high proportions of children from families with a low socioeconomic status (SES) may thus represent a particularly stressful work environment. Indeed, several studies showed that low-SES children are at greater risk of facing health and social problems, learning disorders and disciplinary issues than children from more affluent circumstances.^{4 5} Furthermore, studies using multilevel analyses supported that the positive association between the overall school SES and academic achievement was determinant for all children, regardless of their individual SES.^{6–10} Moreover, socially disadvantaged schools generally suffer from stigma, and parents with more affluent backgrounds tend to avoid them, increasing the socioeconomic segregation between schools.⁹ All these factors linked with school SES may in turn weight on teacher's health, along with

other well-documented sources of strain such as work overload and poor social support.^{11–13}

Overall, the teaching profession is recognised as an occupation with a high prevalence of work-related stress,^{2 14} which may affect both teachers' physical (musculoskeletal disorders, voice disorders and so on) and mental health (burnout, depression, anxiety and so on). Negative consequences can be observed also at workplace level such as absenteeism, turnover and early retirement, all of which will ultimately have a negative influence on the educational system efficiency.¹⁵ Teaching disadvantaged students may further amplify stress processes, but to date, very few studies have focused on the impact of school SES on teachers' health and well-being.^{3 12 16–18} Those studies reported that teachers working in lower SES schools were at increased risk of worse work outcomes such as lower job tenure and lower organisational commitment^{16 17} as well as of poorer health-related outcomes (burnout,¹² sick leave¹⁸ and alcohol use³) compared with teachers working in more affluent schools.

The aim of the present study was to further examine to what extent teaching in socially disadvantaged schools may impact teachers' well-being. Our hypothesis, in accordance with preliminary data in the field, was that teachers in socially disadvantaged schools will be exposed to more stressful situations and, consequently, be more susceptible to worse outcomes with regard to their well-being, both at work and in general.

METHODS

Study population

The population-based postal survey '*Qualité de vie des enseignants*' ('Teachers' Quality of Life') was a cross-sectional study carried out in 2013 by the MGEN Foundation for Public Health (www.fondationmgen.fr) with the technical support of the statistical department ('Direction de l'évaluation, de la prospective et de la performance – DEPP') of the French Ministry of Education.¹⁹ This study was approved by the national authorities, namely, the 'Comité Consultatif sur le Traitement de l'Information en matière de Recherche dans le domaine de la Santé' and the 'Commission Nationale de l'Informatique et des Libertés', who were then responsible for protecting privacy and personal data.

First, 5000 in-service teachers of all grades (from nursery school to university) were randomly selected from among the teaching staff administrative list of the French Ministry of Education after stratification by sex, age and type of school (state school, state school in priority education area and private school under contract). These teachers were sent a letter at their workplace informing them of the objectives and the modalities of the survey and giving them the opportunity to refuse to participate. In total, 71 teachers explicitly refused to participate and 4 teachers indicated that they could not participate as they were in long-term illness. These 75 teachers were excluded from the mailing list, and their administrative data were

not extracted. The questionnaire was sent to the 4925 remaining teachers together with a letter stating, among others, that participation was optional.

Regarding the questionnaire, in addition to sociodemographic information, detailed work-related characteristics were queried, and several standardised questionnaires were used to measure quality of life and well-being at work and in general. In parallel, administrative data, such as teachers' professional background and various school characteristics, were collected directly from the Ministry of Education databases. Of the 4925 sent questionnaires, 2653 were satisfactorily completed (of the respondents 1858 were women and 795 were men; 982 teachers were working in first degree schools, 1416 in second degree schools and 255 at university). Non-respondents were more likely to be male, to teach in higher education and to be younger. We used a weighting procedure to account for the participation bias.

Patient and public involvement

Our participants were in-service teachers who did answer the survey. They were not involved in the design of the study. The results of the study are disseminated through publications in both scientific and general public journals.

School SES

To define low-SES schools, we used the administrative education priority area classification of the French Ministry of Education ('*réseaux d'éducation prioritaire*', named hereafter 'EPA'), which specifically covers primary and lower secondary state schools. This classification takes into account the following social and educational indicators: the proportion of students from underprivileged social backgrounds, the proportion of students with scholarships awarded on social grounds, the proportion of students living in underprivileged neighbourhoods and grade repetition rates in the first year of lower secondary school.²⁰ This classification was initiated in the early 1980s in France to tackle educational inequalities through compensatory education policies that allocate extra resources to schools attended by a significant number of students with a low socioeconomic background.²⁰ In particular, teachers in EPA schools benefit from work arrangements such as reduced class size and fewer hours of class, as well as financial incentives and career bonus to encourage them to start and continue working there.²⁰ As the criteria for EPA classification are not fully established due to a residual political leeway at the school academy level,²⁰ we conducted a sensitivity analysis using, as an alternative to the EPA status, an indicator of students' socioeconomic background based on the proportions of students attending the school with advantaged or disadvantaged social origins. Such proportions were provided by the French Ministry of Education for secondary schools only, compelling us to restrict this sensitivity analysis to the teachers working at that level. In practice, we isolated the extreme quartiles of the ratio of the proportion of students of advantaged origin to the

proportion of students of disadvantaged origin to create the following three-category classification: mostly high, medium/balanced and mostly low.

Indicators of well-being

Several indicators of work-related well-being and overall well-being were considered to evaluate multiple dimensions of the teachers' health status.

Work-related well-being was evaluated by the following complementary indicators: (1) a single-item measure of job satisfaction ('how satisfied are you with your work?': 'very satisfied', 'rather satisfied', 'not very satisfied' and 'not satisfied at all'); (2) a question relating to the evolution of job difficulty in the last 5 years or since initiation ('would you say that the exercise of your profession has been': 'neither more nor less difficult', 'less and less difficult', 'more and more difficult'); and (3) the three dimensions of burnout syndrome, using the Maslach Burnout Inventory adapted to educational settings (MBI-Educators Survey).^{21 22} In the 'Teachers' Quality of Life' study, the Cronbach's α coefficients were 0.89 for the emotional exhaustion subscale, 0.65 for the depersonalisation subscale and 0.76 for the personal accomplishment subscale, respectively. The scores of the three burnout dimensions were dichotomised using the following tertiles, as previously suggested²³: high emotional exhaustion (tertile 3 vs tertiles 1–2), high depersonalisation (tertile 3 vs tertiles 1–2) and low personal accomplishment (tertile 1 vs tertiles 2–3).

Overall well-being was evaluated using the short version of the WHO Quality of Life questionnaire (WHOQOL-Bref),²⁴ a 24-item questionnaire exploring: (1) physical health (seven items); (2) psychological health (six items); (3) social relationships (three items) and (4) environment (eight items). In the present setting, the Cronbach's α coefficients for the four domains were, respectively, 0.77, 0.69, 0.72 and 0.72. In addition, the WHOQOL-Bref questionnaire includes the following two general items assessing overall satisfaction with life and a general sense of personal well-being that were also considered in the present study: (5) quality of life ('How would you rate your quality of life?': 'very good', 'good', 'neither poor nor good', 'poor' and 'very poor') and (6) perceived health ('How satisfied are you with your health?': 'very satisfied', 'satisfied', 'neither satisfied nor dissatisfied', 'dissatisfied' and 'very dissatisfied').²⁵

Covariates

In addition to sociodemographic characteristics (age, sex and family status), the following work-related characteristics that had been linked with teachers' well-being^{12 26} and that were presumed to be also associated with EPA status were considered as potential confounding factors: (1) at the 'teacher level': teaching level (nursery school vs elementary school among primary schools), number of students per class, total working time per week, type of contract (full vs part-time), travel time to work (≤ 15 min, 16–44 min and ≥ 45 min), psychosocial risk

factors (scores for psychological demand, decision latitude and social support) measured through the Karasek Job Content Questionnaire²⁷ and self-report of psychological violence at work according to Leymann's definition²⁸ (neither witness nor victim, witness and victim); and (2) at the 'school level': school size (≤ 199 , 200–599 and ≥ 600 students) and urbanicity (urban, suburban and rural).

For each of the adjustment variables, missing values represented less than 5% of the sample and were imputed to limit attrition. For categorical adjustment variables, missing values were imputed with the most commonly represented value. For continuous variables, missing values were imputed using the average value of the study population. Sensitivity analysis in the restricted sample with no missing values was performed to investigate the impact of this imputation strategy.

Statistical analysis

The statistical analyses consisted first of bivariate analyses performed to explore the association between school EPA status (EPA (disadvantaged) versus non-EPA (non-disadvantaged)) and potential confounding factors. Second, the associations between school EPA status and indicators of teachers' well-being at work and overall well-being were evaluated using logistic or linear regressions and were adjusted alternatively for sociodemographic characteristics only or sociodemographic plus work-related characteristics. Because working contexts are rather different in primary and lower secondary schools, we presented all the results stratified by school level. Outcomes initially in more than two categories (ie, job satisfaction, job difficulty, perception of quality of health and quality of life) were dichotomised because of the small number of teachers in certain categories. All analyses were conducted using Stata/SE (V.13) with the 'SVY' command to account for the sampling design.

RESULTS

As the EPA programme covers only primary and lower secondary state schools, we had to restrict the analyses to the 1549 respondent teachers in those schools, thus excluding teachers working in high school (n=441), in vocational school (n=262), in lower secondary private school (n=146) and at university (n=255). Among included teachers, 42 teachers with missing values for one or the other well-being indicator were further excluded from the analyses. They did not differ in age and sex from the study population. Among the 942 primary school teachers included in the study, 154 (16%) worked in EPA schools. There were 113 (20%) teachers working in EPA schools among the 565 lower secondary school teachers involved. The proportions of teachers in EPA schools in our data were consistent with those observed at the national level.

Differences between teachers in EPA and non-EPA schools with regard to sociodemographic and work-related characteristics

In both primary and lower secondary schools, teachers in EPA schools were significantly younger compared with teachers in non-EPA schools (table 1). There were no differences regarding the sex ratio or family status. Regarding professional characteristics, compared with teachers in non-EPA schools, teachers working in EPA schools had, on average, slightly fewer students in class and had a slightly longer commute time to work. Work conditions were comparable in terms of working hours and the proportions of teachers without a long-term contract or with a part-time contract. Additionally, there were no significant differences between teachers in EPA and non-EPA schools in terms of psychosocial risk factors or violence exposure. Regarding school-level characteristics, compared with teachers in non-EPA schools, teachers in EPA schools worked in more urban and larger schools.

School EPA status and indicators of well-being

Regarding the indicators of work-related well-being (table 2), in the crude model, we noted that primary teachers in EPA schools were at a higher risk of depersonalisation, but the association became non-significant after adjustment. In the fully adjusted model, in both primary and lower secondary schools, we did not observe any associations between school EPA status and indicators of well-being at work, including teachers' job satisfaction, job difficulty and burnout symptomatology. Regarding the indicators of overall well-being (table 3), both in the crude and fully adjusted models, there was no significant difference in the perception of health and quality of life between teachers in EPA and non-EPA schools. Considering the different domains of the WHOQOL-Bref, compared with teachers in non-EPA primary schools, teachers in EPA primary schools had statistically significant lower scores in the physical health domain ($p=0.01$), the environment domain ($p=0.01$) and, to a lesser extent, the psychological domain ($p=0.06$). We did not observe such differences according to EPA status among secondary school teachers. In contrast, there was a trend towards higher satisfaction with social relationships among secondary school teachers working in EPA schools than among those working in non-EPA schools. When using the students' socioeconomic background indicator instead of the EPA status among lower secondary school teachers, we observed similar results (data not tabulated).

DISCUSSION

In the present study, and contrary to our expectations, we did not observe marked differences in work-related and overall well-being between teachers in socially disadvantaged areas and other teachers. Some evidence of worse quality of life in certain domains not explicitly related to work (physical health and living environment) was detected among primary school teachers in EPA schools.

The EPA classification of the French education system was used as a proxy to define low-SES school, but the results were similar when using an alternative approach based on the social distribution of students attending the school.

To the best of our knowledge, this is the first study in France devoted to the differences in teachers' well-being according to the school SES. Our results contrast somewhat with available studies from other countries that suggest a negative impact of working in socially disadvantaged schools on teachers' health and/or work-related well-being. Several studies using data from the Finnish 10-Towns Study, a registry-based study among Finnish primary school teachers, showed that teachers working in schools located in low-income neighbourhoods were more likely to report worse health and work-related outcomes. For instance, one cross-sectional study among 1862 Finnish primary school teachers showed that teachers working in schools located in low-income neighbourhoods had a higher probability of reporting mental health problems, emotional exhaustion and alcohol use compared with teachers working in schools located in the wealthiest neighbourhoods.³ Using a longitudinal design, researchers showed that working in schools located in low-income neighbourhoods was predictive of long-term sick leave (>9 days) among female teachers independent of the teacher's neighbourhood of residence.¹⁸ Regarding work-related outcomes, another longitudinal study in the 10-Towns Study among 1042 teachers reported that the school neighbourhood SES was prospectively associated with teachers' organisational commitment (willingness to remain in the current school) and professional commitment (willingness to continue working in the profession).¹⁶ In addition to the differences among countries, the variety of indicators used to evaluate school SES may explain the discrepancy between our results and those of previous studies. More specifically, the absence of significant cross-sectional associations between EPA status and teachers' work-related well-being could reflect the effective rebalancing by the EPA policy of the negative effects of teaching in low-SES schools on teachers' health. Indeed, teachers in EPA schools usually benefit from better work conditions (such as smaller classes, as was observed in our data) with financial incentives and career bonuses than their counterparts in non-EPA schools to encourage them to work and stay in those schools. It would be interesting to investigate this hypothesis with extended data including information on teachers' incomes in a prospective setting. More than a lack of power (as we observed punctually some significant associations), the virtual absence of significant associations between EPA status and indicators of well-being could also be due to a healthy worker effect. Teachers in EPA schools with a worse well-being will be more likely to ask to change school or even to leave the profession.²⁹ Conversely, experienced teachers who stay in EPA schools might have better coping capacities and resilience than teachers not in EPA schools.²⁹ Teacher resilience is defined as the extent to which a teacher is able to maintain a set

Table 1 Sociodemographic and professional characteristics of the teachers by school EPA status,* stratified by school level (n=1507)

	Primary school teachers			Lower secondary school teachers		
	Non-EPA (n=788)	EPA (n=154)	P value†	Non-EPA (n=452)	EPA (n=113)	P value†
Sociodemographic factors						
Sex, % women	85	83	0.53	65	61	0.38
Age category in years, %			0.01			0.01
≤34	24	36		25	39	
35–49	53	48		50	42	
≥50	22	16		26	19	
Family status, %			0.96			0.15
In a couple, with child	63	62		53	47	
In a couple, without child	17	16		25	28	
Single, with child	9	10		7	3	
Single, without child	11	12		16	22	
Professional factors – individual level						
Teaching level, %			0.28			
Nursery school (preschool)	33	38				
Elementary school	67	62				
Number of students per class, m±SD	24±5	22±4	0.001	24±5	22±4	<0.001
Working time in hours per week, m±SD						
Teaching	25	25	0.64	19	19	0.95
Other tasks	17	17	0.74	20	18	0.03
Part-time, %	15	11	0.20	15	14	0.78
Travel time home to work, %			<0.001			0.76
≤15 min	69	56		45	44	
16–44 min	29	36		49	48	
≥45 min	3	9		6	8	
Psychosocial work environment,‡ m±SD						
Psychological demand (score/36)	24±4	24±4	0.39	24±4	23±4	0.45
Decision latitude (score/96)	76±8	76±8	0.45	76±8	75±8	0.34
Social support (score/32)	22±4	22±4	0.57	23±4	23±4	0.75
Psychological violence at work,§ %			0.59			0.72
Neither witness nor victim	66	57		40	44	
Witness but not victim	19	23		39	38	
Victim	16	19		20	18	
Professional factors – school level						
School localisation, %			<0.001			0.01
Urban	24	49		39	52	
Suburban	34	38		31	33	
Rural	42	13		30	15	
School size, %			0.03			0.06
≤199 students	70	60		4	3	
200–599	30	39		55	71	
≥600	0	1		41	26	

*Education Priority Area (EPA) is an administrative classification of the French Ministry of Education and was used to define low-SES schools.

† χ^2 tests for categorical variables and t-tests for continuous variables.

‡Derived from the Job Content Questionnaire.²⁷

§Self-reported exposure based on Leymann's definition of psychological violence questionnaire.²⁸

SES, socioeconomic status.

Table 2 Association between school EPA status and teachers' well-being at work, stratified by school level

	Primary school teachers			Lower secondary school teachers		
	%	Unadjusted OR (95% CI)	Adjusted† OR (95% CI)	%	Unadjusted OR (95% CI)	Adjusted† OR (95% CI)
Perceived job satisfaction ('not satisfied at all' / 'not satisfied' / 'rather satisfied' / 'very satisfied')						
Non-EPA	20.1	1.00 (ref)	1.00 (ref)	20.1	1.00 (ref)	1.00 (ref)
EPA	20.1	1.05 (0.68 to 1.62)	0.97 (0.59 to 1.59)	18.6	0.91 (0.53 to 1.55)	0.74 (0.39 to 1.42)
Perceived job difficulty ('more and more difficult' vs 'neither more nor less difficult' / 'less and less difficult')						
Non-EPA	61.3	1.00 (ref)	1.00 (ref)	57.1	1.00 (ref)	1.00 (ref)
EPA	56.2	0.81 (0.57 to 1.16)	1.00 (0.65 to 1.54)	53.9	0.88 (0.57 to 1.34)	0.90 (0.54 to 1.49)
High emotional exhaustion§ (tertile 3 vs tertiles 1–2)						
Non-EPA	38.0	1.00 (ref)	1.00 (ref)	36.1	1.00 (ref)	1.00 (ref)
EPA	37.9	1.00 (0.69 to 1.43)	1.02 (0.67 to 1.56)	31.8	0.82 (0.53 to 1.28)	0.96 (0.56 to 1.66)
High depersonalisation§ (tertile 3 vs tertiles 1–2)						
Non-EPA	23.0	1.00 (ref)	1.00 (ref)	34.4	1.00 (ref)	1.00 (ref)
EPA	30.5	1.47* (1.00 to 2.17)	1.49 (0.97 to 2.30)	35.3	1.04 (0.67 to 1.61)	1.06 (0.83 to 1.74)
Low personal accomplishment§ (tertile 1 vs tertiles 2–3)						
Non-EPA	27.1	1.00 (ref)	1.00 (ref)	38.0	1.00 (ref)	1.00 (ref)
EPA	31.6	1.24 (0.85 to 1.82)	1.17 (0.77 to 1.79)	31.5	0.75 (0.48 to 1.17)	0.69 (0.42 to 1.13)

ORs and 95% CIs from logistic regression models.

* $P < 0.05$.

†Education Priority Area (EPA) is an administrative classification of the French Ministry of Education and was used to define low-SES schools.

‡Model adjusted for age, sex and family status and the following work-related characteristics: type of contract (full vs part-time), number of students per class, weekly working time, travel time to work (≤ 15 min; 16–44 min; and ≥ 45 min), psychosocial risk factors (scores of psychological demand, decision latitude and social support) measured through the Karasek Job Content Questionnaire, psychological violence at work according to Leymann's definition, school size (≤ 199 , 200–599 and ≥ 600 students) and school location (urban, suburban and rural areas).

§The scores for the three burnout dimensions as measured using the Maslach Burnout Inventory were dichotomised using the following tertiles: tertile 3 versus tertiles 1–2 for the emotional exhaustion and depersonalisation dimensions and tertile 1 versus tertiles 2–3 for the personal accomplishment dimension.

SES, socioeconomic status.

Table 3 Association between school EPA status† and teachers' overall well-being (WHOQOL-Bref‡), stratified by school level

Overall items§	%	Primary school teachers			Lower secondary school teachers		
		Unadjusted OR (95% CI)	Adjusted¶ OR (95% CI)	%	Unadjusted OR (95% CI)	Adjusted¶ OR (95% CI)	%
Perception of quality of life ('very poor'/'poor'/'neither poor nor good' vs 'good'/'very good')							
Non-EPA	38.9	1.00 (ref)	1.00 (ref)	34.8	1.00 (ref)	1.00 (ref)	
EPA	39.2	1.03 (0.72 to 1.48)	0.90 (0.58 to 1.38)	36.9	1.10 (0.71 to 1.71)	0.95 (0.55 to 1.65)	
Perception of quality of health ('very dissatisfied'/'dissatisfied'/'neither satisfied nor dissatisfied' vs 'satisfied'/'very satisfied')							
Non-EPA	40.2	1.00 (ref)	1.00 (ref)	35.7	1.00 (ref)	1.00 (ref)	
EPA	42.0	1.13 (0.79 to 1.62)	0.98 (0.66 to 1.46)	32.0	0.89 (0.56 to 1.40)	0.78 (0.45 to 1.34)	
Quality of life domains**							
		Median score (/100)	β (95% CI)	Median score (/100)	β (95% CI)	β (95% CI)	
Physical health							
Non-EPA	71.4	1.00 (ref)	1.00 (ref)	75.0	1.00 (ref)	1.00 (ref)	
EPA	67.9	-4.30* (-7.10 to -1.52)	-3.41* (-6.10 to -0.71)	75.0	1.38 (-1.77 to 4.54)	0.97 (-2.06 to 4.00)	
Psychological							
Non-EPA	70.8	1.00 (ref)	1.00 (ref)	70.8	1.00 (ref)	1.00 (ref)	
EPA	70.8	-3.06* (-5.80 to -0.32)	-2.70 (-5.44 to 0.06)	75.0	1.61 (-1.28 to 4.50)	1.56 (-1.28 to 4.40)	
Social relationships							
Non-EPA	75.0	1.00 (ref)	1.00 (ref)	75.0	1.00 (ref)	1.00 (ref)	
EPA	75.0	-2.59 (-5.66 to 0.48)	-2.05 (-5.06 to 0.97)	75.0	3.45* (0.01 to 6.88)	3.04 (-0.54 to 6.62)	
Environment							
Non-EPA	68.8	1.00 (ref)	1.00 (ref)	71.9	1.00 (ref)	1.00 (ref)	
EPA	65.5	-4.03* (-6.35 to -1.71)	-2.85 (-5.06 to -0.63)	68.8	-2.16 (-5.27 to 0.96)	-1.76 (-4.59 to 1.06)	

*P<0.05.

†'Education Priority Area (EPA)' is an administrative classification of the French Ministry of Education and was used to define low-SES schools.

‡Short version of the WHO Quality of Life questionnaire.

§ORs and 95% CIs from logistic regression models.

¶Model adjusted for age, sex and family status and the following work-related characteristics: type of contract (full vs part-time), number of students per class, weekly working time, travel time to work (≤15 min; 16–44 min; and ≥45), psychosocial risk factors (psychological demand, decision latitude and social support) measured through the Karasek Job Content Questionnaire,

psychological violence at work according to Leymann's definition, school size (≤199, 200–599 and ≥600 students) and school location (urban, suburban and rural areas).

**Beta coefficients and 95% CIs from linear regression models.

SES, socioeconomic status.

of positive attributes regarding their work as a teacher in the face of dealing with the range of challenges, pressures and demands inherent in their work.²⁹ Interestingly, in the unadjusted model among lower secondary school teachers, the satisfaction with social relationships was better among teachers in EPA schools than among those in non-EPA schools, suggesting that those teachers enjoy more social resources. The difference was no longer significant in the adjusted models, possibly due to the adjustment for age. Indeed, teachers in EPA schools are younger than those in non-EPA schools, which must be related to the staff assignment point system in France, wherein the least experienced people are also those with fewer points. These selection effects should be carefully considered in further studies. In particular, it would be important to take into account seniority in EPA schools and other confounding factors in the analysis without risking overadjustment.

Although we did not observe marked differences in well-being between teachers in EPA or non-EPA schools, certain associations were punctually significant. Indeed, among primary teachers, compared with those in non-EPA schools, those in EPA schools were more likely to report worse physical health. As suggested by a trend towards higher depersonalisation symptomatology among them, primary teachers in EPA schools may well have to face specific demands and emotional difficulties that could impact their quality of life.³⁰ Moreover, compared with teachers in non-EPA primary schools, teachers in EPA primary schools were less satisfied with their living environment. Most teachers lived rather close to their workplace (<30 min), with primary teachers living closer on average than those teaching at higher levels. Therefore, primary teachers in EPA schools are more likely to reside in a more deprived area. Place of residence, when characterised by SES, has been shown to be associated with increased morbidity, mortality and health risk behaviours.³¹ Similarly, Virtanen *et al* showed that teachers working in schools located in disadvantaged neighbourhoods were more likely to live in disadvantaged neighbourhoods and were more likely to take sick leave.^{3 18} Both work and residential neighbourhoods impact teachers' well-being, but we cannot further investigate this hypothesis because teachers' addresses were not available in the present setting.

The strengths of the study are the large and controlled sample of French teachers in primary and lower secondary schools, with a good participation rate, providing various indicators relating to well-being. In the literature, well-being at work is often evaluated only through job satisfaction.³² In addition, numerous potential confounders at the teacher and school levels were controlled for. Several of these variables were obtained from a comprehensive database provided by the Ministry of Education, including the school characteristics. Among the limitations of the study, our analysis relied on self-reported measures

of well-being which, although validated, may include self-presentation biases.²⁹ However, we have no reason to believe that this bias differs depending on the school EPA status, so its influence would be limited in the estimation of the studied associations. Other instruments to evaluate burnout³³ or specific questionnaire to evaluate well-being at work as a multifaceted construct including multiple dimensions (social, psychological, financial and so on) have more lately been developed.³⁴ In our study, we used complementary indicators related to well-being at work, including job satisfaction, the evolution of job difficulty and burnout symptomatology; however, using alternative instruments and fully conceptual models would be of interest to further test the robustness of our results. Moreover, and due to the cross-sectional design, we cannot discuss causality for the few significant associations observed. A longitudinal analysis would allow us to address this limitation and to explore the possibility of a healthy worker effect. The generalisability of our results to other countries also constitutes a limitation because the education system in France differs from those in other countries. It would be interesting to obtain similar data across European countries that have also developed EPA policies to compare them with our results and draw more complete conclusions on the well-being of teachers in disadvantaged schools. In the present French study, we did not find evidence of a substantial effect of working in socially disadvantaged schools on teachers' work-related well-being. Isolated negative associations with certain indicators of well-being among primary school teachers need to be further examined in other settings.

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