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1 **Physical Education Teachers' Perceived Sexual and Physical Violence and Work-**

2 **related Stress**

3

4 This study investigated the relationships between sexual (verbal and non-verbal sexual

5 harassment) and physical violence against physical education (PE) teachers and work-

6 related stress. Participants were 175 (females 122, males 53) Finnish PE teachers aged

7 between 27 and 62 years. The findings showed that 1) higher perceived physical vio-

8 lence was positively associated with higher perceived non-verbal sexual harassment and

9 work-related stress; 2) teachers with a sport science degree perceived higher work-re-

10 lated stress mediated by physical violence than other teachers; 3) longer-serving PE

11 teachers reported lower verbal sexual harassment than teachers with less teaching expe-

12 rience; and 4) female PE teachers reported higher work-related stress than male teach-

13 ers. These results indicated that violence against PE teachers is multidimensional. To

14 prevent work-related stress in PE teachers, school authorities could encourage teachers

15 to report student threats as a violence prevention strategy in schools and provide appro-

16 priate support for teachers who have been victims of violence.

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Introduction

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27   Violence against teachers is a serious cause of work-related stress in the profession

28   (Bounds & Jenkins, 2018; Espelage et al., 2013; Pas et al., 2012). Physical education

29   (PE) is unique in that, unlike other school subjects, PE teachers usually help students

30   through physical contact or touching to complete movements or prevent injury when

31   performing movements (Öhman & Grunberg-Sandell, 2015). PE teachers can also be

32   victims as well as perpetrators of physical violence and sexual harassment (Steffgen &

33   Ewen, 2007). Past studies on violence in schools have focused on violence among stu-

34   dents (Bounds & Jenkins, 2018; Gerberich et al., 2014; Mármol et al., 2018) to the ne-

35   glect of sexual and physical violence against teachers by students in school PE classes

36   (Taylor & Garratt, 2010). This is an important issue, as the consequences of student ag-

37   gression against teachers can be serious (Maeng et al., 2020). The present study aimed

38   to extend previous findings by investigating the associations between two types of inter-

39   personal violence, sexual and physical violence, and work-related stress from the per-

40   spective of PE teachers.

41   In Finland, the site of this study, all schools follow a national PE curriculum,

42   which specifies the objectives and core contents of PE. Education is publicly funded at

43   all levels while schools are responsible for the teaching arrangements and the effective-

44   ness and the quality of the education given. Currently, comprehensive school students

45   (grades 1 to 9) are required to have two or three PE classes per week. Each class, in-

46   cluding active and non-active periods, lasts 45 minutes. Schools may, if they wish, pro-

47   vide additional classes. Schools are also free to determine how students are grouped

48   (Finnish National Agency for Education, 2016). Elementary school children in grades

49   one and two are typically taught in mixed PE groups by their class teachers. Thereafter,

50   in elementary (grades three to six) and in middle (grades seven to nine) and high school,

51 students are usually taught in gender-based groups, girls by female subject teachers and

52 boys by male subject teachers.

53   In this study, interpersonal violence refers to both sexual and physical violence.

54 Sexual harassment as a form of sexual violence (Ferrara et al., 2019; Krug et al., 2002)

55 ranges from unwanted, threatening, or offensive touching (physical) to gesturing (non-

56 verbal) and inappropriate jokes or offensive comments (verbal) based on stereotypes,

57 sex, gender identity, or sexual orientation (Bendixen et al., 2018; Fasting, 2015). Verbal

58 sexual harassment includes, for example, derogatory sexual remarks, sexual jokes, sex-

59 ual questions, requests for intercourse, and the spreading of rumors (Bendixen et al.,

60 2018; Chiodo et al., 2009), whereas non-verbal sexual harassment comprises sexually

61 suggestive facial or bodily signals, whistling, winking, leering, howling, or making kiss-

62 ing sounds (Bendixen et al., 2018). The few previous studies on the sexual harassment

63 of teachers found that the phenomenon is relatively infrequent in schools. For instance,

64 in a nationwide internet-based survey in Dutch secondary schools, about three percent

65 of teachers reported sexual harassment (verbal, non-verbal, or physical) by students

66 (Mooij, 2011). In a survey conducted by the Institute of Criminology and Legal Policy

67 (Salmi & Kivivuori, 2009), nearly three percent of Finnish school teachers reported har-

68 assment by students and just one percent of K-12 teachers in the US reported that sexual

69 harassment in their workplace is very or extremely common (Kurtz et al., 2018). How-

70 ever, no centralized database exists on sexual harassment and sexual violence in schools

71 (Women and Equalities Committee, 2016). Furthermore, little research on violence

72 against teachers, especially on sexual harassment, has been published (Lahelma, et al.,

73 2000; Mooij, 2011). Thus, to extend the few previous findings, studies on sexual harass-

74 ment against teachers are clearly needed.

75   Physical violence is defined as the intentional, one-time or repeated rough inflic-

76   tion of pain or bodily injuries by another person that involves a potential risk for visible

77   or non-visible physical harm and consequences (Krug et al., 2002). Previous studies

78   have shown that physical violence against teachers varies somewhat across countries.

79   For example, a national study conducted in the United States revealed that 44% of K-12

80   teachers reported at least one experience of physical violence in the current or past year

81   (McMahon et al., 2014). A study conducted in Slovakia (Dzuka & Dalbert, 2007) found

82   that 5% of secondary school teachers had experienced physical violence within the past

83   thirty days, while about 26% of elementary and middle school teachers in Finland re-

84   ported that they had occasionally been subjected to verbal, non-verbal, and physical as-

85   saults by students (Kauppi & Pörhölä, 2012). Cultural and school-level differences

86   aside, the overall prevalence of violence against teachers appears to be similar in many

87   countries (Dzuka & Dalbert, 2007; James et al., 2008; Kauppi & Pörhölä, 2012; Moon

88   & McCluskey, 2018). However, despite research findings that student aggression is a

89   crucial factor underlying teachers' work-related stress (Espelage et al., 2013), research

90   on the topic remains scarce.

91   According to Derogatis (1987), stress is a state of psychological pressure influ-

92   enced by personality (e.g., behavior, attitudes, coping mechanisms), environmental fac-

93   tors (e.g., occupational satisfaction) and emotional responses (e.g., anxiety, depression).

94   In short, stress is an outcome of individuals' inability to cope with their surrounding en-

95   vironment (Dobson & Smith, 2000). Short-term and temporary stress can be positive,

96   but being under continuous stress at work may cause, for example, job dissatisfaction

97   and general exhaustion in teaching jobs (Gillespie et al., 2001). To avoid such negative

98   effects of stress, previous findings indicate that teachers' occupational well-being de-

99   pends on the presence of positive factors such as good relations with students and the

100 absence of negative factors such as difficult relationships with students (Aldrup et al.,

101 2018) and teacher-directed violence (Galand et al., 2007). However, studies have shown

102 that teaching is a high-stress profession. For instance, the Teacher Wellbeing Index

103 (2019) showed that 73% of school teachers in the UK reported feeling stressed during

104 the current year. Similarly, approximately 61% of US school teachers felt stressed at

105 work (Educator Quality of Work Life Survey, 2017), and 43% of Finnish school teach-

106 ers reported often or very often experiencing work-related stress during the past year

107 (Opetusalan työolobarometri, 2017). Many studies have found that violence against

108 teachers by students is directly related to teacher stress levels and higher rates of burn-

109 out (e.g., Bounds & Jenkins, 2018; Espelage et al., 2013; Pas et al., 2012). Despite this,

110 and the fact that PE is very different in its nature from other school subjects, the associ-

111 ations between different types of violence and PE teachers' work-related stress have not

112 yet been investigated.

113   One of the primary shortcomings of the existing body of research is that most

114 studies have focused on student experiences of violence (Espelage et al., 2013; Galand

115 et al., 2007). Teachers have been regarded as a source of information about student be-

116 havior rather than as witnesses or victims of school violence (Nicolaides et al., 2002). In

117 addition, quantitative research among teachers has usually focused only on one or a few

118 types of violence (Buda, 2009; Mooij, 2011).The present study contributes to filling

119 these research gaps by investigating the associations between sexual and physical vio-

120 lence against teachers and perceived work-related stress. Since violence against teachers

121 has previously been explained by teacher's gender (Mooij, 2011; Salmi & Kivivuori,

122 2009), years of teaching experience (Lokmić et al., 2013), student age (Chen & Astor,

123 2009; Dzuka & Dalbert, 2007), school setting (Bounds & Jenkins, 2018), and pedagogi-

124 cal choices (Mooij, 2011), the covariables of teacher's gender, teaching experience,

125 teaching level, region, and type of tertiary education were included in the present analy-

126 sis. This information may be of value in improving schools' procedures and policies

127 aimed at preventing violence against teachers.

128 The specific aim of this study was to investigate the relationships between

129 teacher-directed non-verbal sexual harassment, verbal sexual harassment, and physical

130 violence, and work-related stress in a sample of PE teachers. In addition, the covariate

131 effects of teacher's gender, teaching experience, teaching level, region, and type of ter-

132 tiary education on teacher-directed non-verbal sexual harassment, verbal sexual harass-

133 ment, physical violence, and work-related stress were tested (Figure 1). Based on previ-

134 ously established associations, physical violence was expected to be positively linked

135 with higher work-related stress. Female PE teachers were expected to have higher work-

136 related stress levels, and PE teachers with less teaching experience were expected to re-

137 port more sexual harassment and physical violence than more experienced counterparts.

138

139 **Method**

140 **Participants and Procedure**

141 The sample comprised 175 PE teachers aged between 27 to 62 years (M = 44.8 ± 9.2

142 years) recruited across eighteen regions in Finland (Table 1). Nearly 96% of participants

143 reported themselves as heterosexual, four participants as mostly heterosexual (2.3%)

144 and three participants as homosexual or other (1.7%). Mean teaching experience was 16

145 years, ranging from one to 38. Data were collected anonymously by a digital survey be-

146 tween September and November 2018. The link to the online survey was published on

147 the website of the Association of Physical and Health Educators in Finland. It was also

148 directly sent to individual PE teachers and school principals. Prospective participants

149   were informed that participation was voluntary and anonymous. They were also in-

150   formed on the opening page of the online survey about the objectives and methodology

151   of the study, potential disadvantages of participating in the study, data processing meth-

152   ods to be used, and the channels through which the study results would be published. To

153   move on from the opening page, participants had to provide their consent by ticking a

154   box. Participants were encouraged to answer honestly and assured that their responses

155   were confidential. On completion of the survey, participants' data were automatically

156   saved on the digital database of the local university and processed by the researchers.

157   Study approval was obtained from the ethics committee of the local university.

158

159   **Measures**

160   Teachers provided details of their gender, tertiary education, region, level of teaching,

161   and years of teaching experience using a structured response format. Previous tertiary

162   education comprised six options (Master of Sport Science, Bachelor of Sport Science,

163   Master of Health Science, sport instructor, Master of Education with specialization in

164   PE, Master of Education without specialization in PE), level of teaching seven options

165   (elementary one to six, middle school seven to nine, high school, vocational school, uni-

166   versity or university of applied sciences, combined elementary and middle school one to

167   nine, and combined middle and high school), and region included all 18 geographical

168   regions of Finland. Teaching experience was measured with the direct question "*In to-*

169   *tal, how many years you have worked as a PE teacher during your work career?*" and

170   the responses were rounded to the nearest year.

171   Sexual (verbal and non-verbal sexual harassment) and physical violence against

172   teachers in the school PE context were assessed using an eight-item scale derived from

previous harassment studies. The item stem was: "*During the last school year, how often have the students in your groups…*" Verbal sexual harassment was measured using a latent variable including the following items modified (y1-y5) from the harassment studies of Witkowska and Kjällberg (2005), Dahlqvist et al. (2016), and Peter et al. (2016) on adolescents in the school context: "*Spread sexually colored rumors about you*," "*Called you names or insulted you in a degrading, sexually colored way*," "*Called you a slut*," "*Asked about your gender or your sexual orientation in an inappropriate context*," and "*Commented on your gender or your sexual orientation in an offensive way.*" Non-verbal sexual harassment was measured using a latent variable including the following two modified items (y6-y7) from the Sexual Experiences Questionnaire (SEQ—DoD) by Fitzgerald et al. (1999): "*Gestured or signaled to you in a sexually charged or suggestive way (e.g., hand signs, body language)*" and "*Made sounds that you perceived as inappropriate or sexually colored (e.g., shouted after you, whistled, gasped or smacked).*" Because the sexual harassment variables have not been previously used in a school PE context, confirmatory factor analysis was performed. Physical violence was assessed using a single item: "*Pushed, bumped, slapped, pinched, and punched or otherwise physically assaulted you.*" Participants rated the frequency of each incident over the past year on a scale from *never (1)* to *almost daily (5)*.

Work-related stress was measured using a direct question "*Have you felt this kind of stress because of your work as a teacher during the previous or current school year?*" The introduction preceding the item was derived from Elo et al. (2003), who described stress as a situation in which a person feels tense, restless, nervous or anxious or is unable to sleep at night because his or her mind is troubled all the time. The responses were rated using a five-point Likert-scale ranging from *not at all (1)* to *very much (5)*.

Data Analyses

First, normality of the distribution, outliers, and missing values were examined. Correlation coefficients, means, and standard deviations were calculated for each study variable. To test the relationships between the covariables (teacher's gender, teaching level, region, tertiary education, teaching experience), with non-verbal and verbal sexual harassment, physical violence, and work-related stress, a path model was implemented. In addition, indirect effects between work-related stress and the covariables through the sexual harassment variables were tested by adding the sexual harassment variables one by one as mediators into the model. Gender differences were examined using a two-group protocol provided by Muthén and Muthén (2013), in which two nested models can be tested by constraining subsequent parameters to be equal.

Chi-square test (χ^2) was used to test the overall goodness-of-fit of the model. A non-significant difference ($p > .05$) between the observed distribution and the theoretical distribution demonstrates acceptable fit of the data. To determine the suitability of the model, the standardized root mean square residual (*SRMR*), the root mean square error of approximation (*RMSEA*), the comparative fit index (*CFI*), and the Tucker-Lewis index (*TLI*) were also examined. A SRMR value of less than .06 is generally considered as a good model fit and a RMSEA value of .08 or less indicates an acceptable model fit. For the CFI and TLI indices, values greater than .95 are indicative of an excellent model fit (Kline, 2005). The proportion of variance was analyzed using a squared multiple correlation value. The preliminary analyses including missing value analysis, and descriptive statistics were analyzed using SPSS Version 26.0 and the path model with Mplus Version 8.3.

Results

Preliminary Analyses

The data were approximately normally distributed, but three significant outliers were detected for the non-verbal sexual harassment variable based on the standardized values (± 3.00) (Tabachnick & Fidell, 2007). The outliers were removed, as they caused an unacceptable Cronbach alpha value (α = .49). After removing the outliers, the alphas supported the internal consistency of the subscales of non-verbal sexual harassment (α = .69) and verbal sexual harassment (α = .82). A total of 0.8% of missing values (12 out of 1 593 values) were identified, as ten teachers did not fully complete the online form. The Missing Completely at Random (MCAR) test (χ^2 = 59.886, df = 46, p = .082) indicated that the data with and without missing values were similar. Therefore, the missing values were considered to be missing completely at random (Little & Rubin, 2002).

Descriptive Statistics

Pearson's correlation coefficients, means, standard deviations, and the composite reliability values of the study variables were examined (Table 2). The results showed that the associations between variables ranged from low to moderate. The strongest positive correlation was found between verbal sexual harassment and physical violence, whereas the strongest negative association was detected between work-related stress and gender. In general, the non-verbal and verbal sexual harassment and physical violence variables had relatively low mean scores. About 4% of teachers had experienced physical violence and 5.2% non-verbal sexual harassment by their students a few times per year, whereas 0.6% had experienced verbal sexual harassment monthly. Nearly 28% of teachers described themselves as stressed quite or very much during the current or past school year.

Confirmatory Factor Analysis

A confirmatory factors analysis was implemented to test the factor structures of the non-verbal and verbal sexual harassment scale. The fit indices revealed an unacceptable factor structure for the scale ($\chi^2(13) = 21.943$, $p = .056$, $CFI = .91$, $TLI = .85$, $RMSEA = .062$, 90% CI [.00, .11], $SRMR = .057$). Based on the modification indices, the residual variances of the individual items "*Asked about your gender or sexual orientation in an inappropriate context*" and "*Commented on your gender or your sexual orientation in an offensive way*" were allowed to correlate (y4 and y5). The modified model showed an excellent factor structure ($\chi^2(12) = 10.279$, $p = .592$, $CFI = 1.00$, $TLI = 1.03$, $RMSEA = .000$, 90% CI [.00, .07], $SRMR = .051$). In addition, the composite reliability values for both the non-verbal and verbal harassment subscales were acceptable (Table 2). Based on this, the reliability of the present scale was adequate for the path model.

The Model of Sexual Violence, Physical Violence, and Work-related Stress

To examine the relationships between gender, level of teaching, region, tertiary education, teaching experience, non-verbal and verbal sexual harassment, physical violence, and work-related stress, a path model was implemented. The model including correlations between non-verbal sexual harassment, verbal sexual harassment, and physical violence (Figure 2) showed excellent fit to the data ($\chi^2(51) = 61.054$, $p = .158$, $CFI = .96$, $TLI = .93$, $RMSEA = .035$, 90% CI [.00, .06], $SRMR = .051$).

A negative direct path was found between work experience and verbal sexual harassment, with longer work experience associated with lower verbal harassment scores. In addition to a negative direct path between gender and work-related stress, another negative path was detected between tertiary education and physical violence, indicating

272 that teachers with a sport science degree perceived higher physical violence than teach-

273 ers with other tertiary education. Perceptions of physical violence were positively asso-

274 ciated with non-verbal sexual harassment and with work-related stress. An indirect path

275 from education to work-related stress mediated by physical violence was detected (β =

276 -.02, SE = .01, p < .05). No further indirect paths were found.

277   A two-group test revealed a significant gender difference in the mean scores for

278 work-related stress ($\chi^2(1)$ = 9.491, p < .01) with female teachers (2.66 ± .74) reporting

279 higher work-related stress than male teachers (2.58 ± .80). Squared multiple correlations

280 revealed that the model explained 8% of the variability of work-related stress in the cur-

281 rent sample.

282

283   **Discussion**

284 This study investigated the relationships between sexual and physical violence against

285 PE teachers and their perceptions of work-related stress. The key findings were: 1)

286 higher perceived physical violence was positively associated with higher non-verbal

287 sexual harassment and work-related stress; 2) teachers' with a sport science degree per-

288 ceived higher work-related stress mediated by physical violence than teachers with

289 other tertiary education; 3) longer-serving PE teachers reported lower verbal harassment

290 than teachers with less teaching experience; and 4) female PE teachers reported higher

291 work-related stress than male teachers.

292   The present study is the first empirical study to investigate the associations of sex-

293 ual and physical violence with work-related stress in a sample of PE teachers. In line

294 with previous findings among teachers with a variety of subjects (Bounds & Jenkins,

295 2018; Espelage et al., 2013; Pas et al., 2012), higher perceived physical violence against

296   PE teachers was associated with higher perceived work-related stress. This is concern-

297   ing, as it can negatively influence teachers' job satisfaction, burnout rate, personal lives,

298   and effectiveness as a teacher (McMahon et al. 2014; Reddy et al. 2013). In doing so,

299   students can also suffer from teacher-directed violence through poor learning environ-

300   ment, having distracted or disengaged teachers, or receiving little attention (Bounds &

301   Jenkins, 2016). A study of Ozkilic and Kartal (2012) showed that many teachers who

302   experience some kind of teacher-directed violence report being worse teachers to their

303   students, and in turn teach them less, which may also cause higher stress in teachers.

304   On the other hand, neither non-verbal nor verbal sexual harassment correlated

305   with perceived stress. One possible explanation may be that PE teachers do not even

306   identify these behaviors as violence, as long as they do not get physical. Alternatively,

307   PE teachers of the present study might tolerate certain suggestive behaviors and sounds

308   in the PE environment to a higher degree than they would in any other school space be-

309   cause of characteristics specific to PE. For instance, PE classes are very different in na-

310   ture than classroom teaching, as typically a plenty of opportunities for social interac-

311   tions (Garn et al., 2011), the competitive and sometimes frustrating situations (Eldar &

312   Ayvazo, 2009), and physical contact and touching (Öhman & Grunberg-Sandell, 2015)

313   are included. In addition, it could be that an adult, physically competent, and often

314   physically fit PE teacher might find it particularly difficult to confess that students'

315   (who are typically minors) behavior has made them feel stressed, uneasy, offended or

316   threatened. Thus, a threshold for reporting sexual harassment from students in a study

317   could be very high. However, these findings support the postulation that teachers expe-

318   riencing any sort of violence while working are in dire need of attention and support

319   (Berlanda et al., 2019). If schools are going to help these teachers, more research is

320   needed to understand the violence they experience, as well as implementing programs

321   and training to help decreasing the rates of school violence (Bounds & Jenkins, 2016).

322   Next, the results showed that higher perceived physical violence was positively

323   associated with higher non-verbal sexual harassment. This finding is interesting, as this

324   specific association has not previously been reported (Lahelma et al., 2000; Mooij,

325   2011). For some reason, similar correlations between verbal sexual harassment and

326   physical violence did not emerge, because it may be that teachers less likely report ver-

327   bal violence from their students (Bound & Jenkins, 2016). It may be that PE teachers

328   are somewhat more tolerant for verbal aggressions, maybe because of the PE context

329   specific characteristics as suggested earlier, especially when teaching secondary school-

330   aged students (Bound & Jenkins, 2016) (as most PE teachers in the current study.)

331   However, the present results also support previous findings that violence against teach-

332   ers is a multidimensional phenomenon linked to the various behaviors on different lev-

333   els from the physical to the emotional and psychological (De Cordova et al., 2019).

334   These findings make it difficult to draw an overall picture of the complex factors under-

335   lying student violence against PE teachers. A common contributory cause is the igno-

336   rance of moral values and appropriate behavior in general due to lack of education in

337   the family and children's inability to recognize any kind of authority, especially when it

338   comes to showing respect for others (Lokmić et al., 2013). Positive teacher-student and

339   teacher-parent relationships can foster cooperation between families and schools and

340   protect against the negative effects of violence in schools (Aldrup et al., 2018). For ex-

341   ample, schools could keep parents involved by informing them about violence preven-

342   tion activities and school policies, raise parental awareness on how to recognize violent

343   behavior, and work with parents to improve key parenting skills (World Health Organi-

344 zation, 2019). Social support from other school staff may help in dealing with challeng-

345 ing behavior and teacher-directed violence at school (Galand et al., 2007; Kauppi &

346 Pörhölä, 2012). School psychologists are well-equipped to support teachers through di-

347 rect consultation and professional counseling, and recommending other counseling ser-

348 vices (Bounds & Jenkins, 2018). In the event of a violent situation, supportive collegial

349 relationships between teachers and principals are useful in building a school culture

350 where problems can be shared and solutions considered as a community (Acton & Glas-

351 gow, 2015). To summarize, extensive collaboration between teachers, principals, par-

352 ents, and other school staff can facilitate positive working relationships in schools and

353 inhibit violent student behavior against teachers.

354   PE teachers with sport science degrees experienced work-related stress more fre-

355 quently than teachers with other type of degrees. This result supports previous studies of

356 Mooij (2011) and Tiesman et al. (2013), who found that the experiences of teacher-di-

357 rected violence may differ across pedagogies and among educational workers. It should

358 be noted that most of the present PE teachers had a sport science degree, and hence the

359 higher numbers of PE classes taught by these teachers may explain the differences be-

360 tween them and PE teachers with other educational backgrounds. This finding, how-

361 ever, draws attention to the content of current PE teacher education. It is possible that

362 other teachers received more training during their university studies on occupational

363 well-being and practical tools for coping with the stressors of work life than PE teach-

364 ers. In Finland, the traditional PE teacher education is heavily focused on students' own

365 motor skills. Another possible explanation for this finding may be that most PE teach-

366 ers with a sport science degree work with middle-school students, whereas the role of

367 teachers with other educational backgrounds is marginal at the middle-school level. Alt-

368 hough elementary and middle schools showed no differences in the mean frequency of

369   student aggression, student age (Chen & Astor, 2009; Dzuka & Dalbert, 2007) may be

370   relevant in some other way. Typically, elementary school teachers and health education

371   teachers also teach other subjects to the same groups. It may be that group stability and

372   the variation in teaching contexts may facilitate better teacher-student relationships. PE

373   teachers usually teach the same students once a week, and hence the teacher does not

374   have much time per student. Additionally, compared to traditional classroom teaching,

375   students have more space to express themselves in both positive and negative ways.

376   This could be a significant factor in the incidence of violence against teachers. How-

377   ever, based on the present results, firm conclusions cannot be drawn on the relationships

378   between type of teacher education, physical violence, and work-related stress. More in-

379   formation on teachers' pedagogies, class management, coping skills, and student de-

380   mographics is needed to clarify these findings.

381   In line with Lokmić et al. (2013), who studied violence against teachers in gen-

382   eral, the longer-serving PE teachers in the present sample reported less verbal sexual

383   harassment than the teachers with less teaching experience. De Cordova et al. (2019)

384   suggest that teachers with longer experience may be better at maintaining discipline and

385   building good relationships with their students (teachers can influence students' reac-

386   tions by their approach and way of teaching), and also less sensitive to provocation by

387   students. For instance, well-prepared and interestingly presented content (Lokmić et al.,

388   2013), good communication with students, including setting boundaries for acceptable

389   behavior (Aldrup et al., 2018), and the teacher creating a pleasant working atmosphere

390   by example (Lokmić et al., 2013) may help prevent student misbehavior. Another expla-

391   nation could be that social relationships between students and teachers are rather infor-

392   mal in Finnish schools, meaning that while teachers are easily approachable by students,

393   the threshold for undesirable student behavior may be also lower (Kauppi & Pörhölä,

394   2012). A major problem in estimating the frequency of verbal sexual harassment against

395   teachers is that most teachers who experience this do not report it (Kurtz et al., 2018).

396   As in cases of physical violence, school authorities could encourage PE teachers to re-

397   port verbal sexual harassment, although it may feel as negligible (Maeng et al., 2020).

398   In less serious cases, schools may impose disciplinary measures appropriate to the mis-

399   behavior, consider conflict resolution, or take other actions responsive to the student's

400   needs (National Threat Assessment Center, 2018). As discussed above, the reasons for

401   the higher frequency of the verbal sexual harassment of teachers with less teaching ex-

402   perience are multidimensional. Since the problem may manifest itself differently in vari-

403   ous schools, solutions should also vary. In the first place, cooperation between families

404   and schools (Aldrup et al., 2018), clear reporting procedures (Maeng et al., 2020), and

405   action plans to prevent verbal sexual harassment (Cohen, 2013) could serve as effective

406   violence prevention strategies in schools.

407   As expected, and consistent with previous international studies irrespective of sig-

408   nificant differences in education systems, female PE teachers reported a higher level of

409   work-related stress than male teachers (Al-Mohannadi & Capel, 2007; Antoniou et al.,

410   2006; Ravichandran & Rajendran, 2007). In contrast, a previous survey conducted

411   among teachers in Finland found no gender differences in perceived work-related stress

412   (Opetusalan työolobarometri, 2017). Interpreting these contradictory results is not a

413   straightforward matter, owing to multiple variables that have not all been considered in

414   all studies. For instance, Antoniou et al. (2006) found that Greek female teachers'

415   higher levels of stress was generally associated with negative conditions in the class-

416   room and student misbehavior, whereas Bounds and Jenkins (2018) found that school

417   location (urban or suburban) also had a significant impact on teachers' perceived work-

418   related stress. Irrespective of the causes of work-related stress among female teachers,

419 the stress experienced by a particular teacher is unique to her and will depend on a com-

420 plex interaction between her personality, values and skills and the prevailing teaching

421 conditions (Montgomery & Rupp, 2005). Based on the findings of Montgomery and

422 Rupp (2005), female teachers, in particular, could benefit from a review and, where nec-

423 essary, reorganization of their working conditions (e.g., class sizes), work routine, re-

424 sources, and workload. Schools could also provide teachers with additional training and

425 education in stress management and the reconciliation of work and family life, which

426 may often be more challenging for female teachers. It should be considered that the pro-

427 portion of female teachers in the current sample was larger than male teachers. In addi-

428 tion, as female PE teachers typically teach girls and males instruct boys' PE groups, it

429 may bring up some variation in perceived work-related stress. However, based on the

430 current data, it is impossible to evaluate impacts of the disproportion on perceived

431 work-related stress levels.

432 It can be concluded from these results that early signs of student aggression, such

433 as threats, towards PE teachers should be taken seriously before the aggression becomes

434 physical. For instance, school authorities could encourage teachers to report threats as a

435 violence prevention strategy in their schools (Maeng et al., 2020). Previous studies have

436 also revealed that schools with a more authoritative school climate have lower rates of

437 aggression against teachers than schools with a permissive climate (Berg & Cornell,

438 2016; Huang et al., 2017). This means that while the school climate is strict, it is also

439 positive and has fair disciplinary practices and supportive teacher-student relationships

440 (Cornell et al., 2016). Appropriate strategies for creating a positive climate and atmos-

441 phere in school PE classes should be aimed at promoting 1) *physical and emotional*

442 *safety* (clearly communicated rules and norms about physical violence and verbal abuse,

443 such as that students are required to use language in a precise and appropriate manner),

444   2) *supportive teaching practices* (all students are given opportunities to succeed; PE

445   teachers encourage students to try out new techniques, show them how to learn from

446   mistakes, and talk to them about how certain actions will affect others), 3) *respect for*

447   *diversity* (all students are listened to and their opinions count; groups and teams are reg-

448   ularly changed and do not always consist of the same students), and 4) *a health-promot-*

449   *ing environment* (teachers promote a sense of belonging and commitment by taking stu-

450   dents' individual needs into account and clearly inform students and parents on how a

451   student can improve her or his PE performance) (Cohen, 2013). Finally, to prevent

452   work-related stress in PE teachers, school communities could provide appropriate sup-

453   port for teachers who have been victims of violence (World Health Organization, 2019).

454   As the strategies listed above indicate, there are many ways to improve the school cli-

455   mate that apply to PE classes. However, as emphasized by Cohen (2013), improving the

456   school climate should be a continuous process comprising climate assessments, the in-

457   terpretation of findings, and the development of action plans. Thus, improving the

458   school climate concerns the whole school community.

459

460   **Strengths and Limitations**

461   The present study is highly topical, as the recent "Me Too" movement brought the idea

462   of sexual harassment and assault into the public debate. Studies on sexual harassment

463   against PE teachers had hitherto been lacking, whereas inter-student violence among

464   students has been widely researched. A key strength of the present study was the exami-

465   nation of three types of violence, namely verbal and non-verbal sexual harassment and

466   physical violence, which have not been concurrently examined among PE teachers.

467   However, the present study has its limitations. First, the data were gathered using

468   an internet-based format which did not permit controlling for participant demographics.

469 For instance, it was impossible to know whether the sample was representative of PE

470 teachers who have most frequently been subjected to sexual or physical violence by

471 their students. Furthermore, the study was cross-sectional, and therefore conclusions on

472 the causal relationships between sexual and physical violence and work-related stress

473 cannot be drawn. Finally, the study would have benefitted from a larger sample of PE

474 teachers representing different school levels and regions, as most participants were cur-

475 rently teaching at the middle-school level and located in the larger cities in Finland.

476 With these caveats, the present study extends previous findings on violence against PE

477 teachers and contributes to filling the research gaps in the literature. Future studies

478 could investigate topics that remain unclear, such as perceived sexual and physical vio-

479 lence in different types of schools in both urban and rural contexts and across a broader

480 student age range. More in-depth studies on the antecedents and consequences of sexual

481 violence in schools, especially sexual assaults against teachers, are needed.

482

483 **Conclusion**

484 The key findings of this study were, first, that violence against PE teachers is a multidi-

485 mensional phenomenon, as perceived non-verbal sexual harassment and physical vio-

486 lence were closely related. Moreover, the results showed that the consequences of stu-

487 dent violence towards teachers are serious. PE teachers who had been subjected to phys-

488 ical violence by their students were more likely to suffer from higher work-related

489 stress. Longer-serving PE teachers may be better at building good relationships with

490 their students and less sensitive to student provocation, as years of teaching experience

491 was a significant predictor of lower perceived verbal sexual harassment. Alternatively,

492 these teachers may have a lower awareness of sexual harassment, resulting in a lower

493 reporting rate.

494 To prevent work-related stress in PE teachers, schools could focus on the creation

495 of a positive climate through collaboration with students and parents in which all parties

496 are listened to and a sense of belonging and commitment fostered. To combat violent

497 situations, schools could introduce up-to-date assessment procedures and action plans

498 that encourage a low threshold reporting by PE teachers of sexual harassment or physi-

499 cal violence-related incidents. School authorities could also encourage PE teachers to

500 report student threats as a violence prevention strategy and provide appropriate support

501 for teachers who have been victims of violence. To raise awareness of sexual violence

502 against teachers, the identification of types of sexual harassment could be considered

503 more effectively in PE teacher education programs. Supportive collegial relationships

504 between teachers and principals and relationships with parents are also useful in devel-

505 oping a school culture where problems such as violence can be shared and solutions

506 considered as a community.

507

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