



The role of personality, empathy, and the perception of the instructor's caring on nursing students' burnout: A cross-sectional study

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ABSTRACT

Aim: The present study aimed to evaluate the contribution of personality, empathy, and the perception of instructor's caring in predicting burnout in nursing students.

Background: Burnout is alarmingly prevalent and rising among nursing students. Furthering our understanding of individual and clinical environmental antecedents of burnout is crucial to shield nursing students' well-being during their training.

Methods: In a cross-sectional study design, the Ten Item Personality Inventory (TIPI), the Brief version of the Interpersonal Reactivity Index (BIRI), the Nursing Students' Perception of Instructor Caring (NSPIC), and the Copenhagen Burnout Inventory (CBI) were administered to 361 (83.9 % females) Italian nursing students between July and December 2021. *t*-Tests, analyses of variance, Pearson's correlations, and hierarchical regressions were performed to examine the association of CBI with socio-demographics, TIPI, BIRI, and NSPIC.

Results: Being female and having a low household income were predictors of Personal Burnout and Work-related Burnout. Personal Burnout was positively associated with TIPI-Neuroticism and BIRI-Personal Distress. Work-related Burnout was positively associated with BIRI-Personal Distress and NSPIC-Control, and negatively associated with TIPI-Openness to Experience, NSPIC-Support, NSPIC-Confidence. Client-related Burnout was negatively associated with TIPI-Agreeableness, NSPIC-Support, NSPIC-Confidence. Beyond the effect of socio-demographics, TIPI, and BIRI, NSPIC subscales significantly contributed to the explained variance in CBI scores.

Conclusions: Sex, household income, personality, and empathy should be considered when designing interventions to decrease burnout in nursing students. Promoting caring relationships between clinical instructors and their pupils may contribute to reduce nursing students' burnout.

1. Introduction

Burnout has been conceptualized as a state resulting from chronic workplace stress and characterized by high levels of emotional exhaustion, depersonalization, and lack of professional accomplishment (Maslach & Jackson, 1981). When looking at healthcare settings, physical and mental fatigue is considered as the core of burnout and three aspects of burnout have been advanced: *Personal Burnout* refers to the level of exhaustion encountered by an individual. *Work-related Burnout* refers to the level of exhaustion perceived by an individual as stemming from their professional duties. *Client-related Burnout* refers to the level of exhaustion experienced by an individual in relation to their interactions with patients (Kristensen et al., 2005; Schaufeli et al.,

2002).

Burnout is alarmingly prevalent and rising among nursing students (Garrosa et al., 2008; Henderson et al., 2020; Wei, Henderson, et al., 2021). Previous research found a high prevalence of burnout among nursing students, which was particularly severe in the dimension of emotional exhaustion (Da Silva et al., 2014). Among the detrimental results of burnout are psychological and physical effects (Wei, Dorn, et al., 2021), academic issues, drop-out, or early exit from profession (Bani et al., 2023; Cañadas-De La Fuente et al., 2015; Dante et al., 2011). Evidence suggests that when these issues raised in the educational setting are left unaddressed, they can be carried over into workplaces (Rudman & Gustavsson, 2012) where burnout negatively impacts the quality of care provided, exposes patients to care-related risks, and

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increases the risk of adverse events (Galbraith & Brown, 2011). A great variability in burnout distribution in nursing students has been found (Hwang & Kim, 2022). Among the factors accountable for this variability are the diverse configurations of socio-demographic factors (e.g., sex, academic year, family income satisfaction, etc.) (Aguayo et al., 2019), dispositional characteristics (McVicar, 2003), and clinical environmental factors (Teasdale et al., 2001). When considering dispositional characteristics, although findings are not clear-cut, personality (Divinakumar et al., 2019) and empathy (Hunt et al., 2017) have shown to be two of the main predictors of burnout in nursing students.

As for personality traits, Agreeableness has been found to be negatively related to emotional exhaustion (Alarcon et al., 2009), depersonalization (Bakker et al., 2006; Zellars et al., 2000), and positively to personal accomplishment (Bakker et al., 2006; Piedmont, 1993). Conscientiousness is often associated with good problem-solving abilities and coping with difficulties (Watson & Hubbard, 1996), but evidence on the role of this personality trait in burnout onset is not definitive (Bakker et al., 2006; Piedmont, 1993). Extraversion and burnout have been found negatively correlated (González-Romá et al., 2006; Sonnenschein et al., 2007), but consensus is lacking on the direction of this relationship (Gustafsson et al., 2009; Zellars et al., 2000). Individuals with higher levels of Neuroticism are prone to reporting emotional exhaustion, diminished personal achievement, and have a greater tendency to dehumanize patients (Bakker et al., 2006; Zellars et al., 2000). Research highlighted a modest but significant positive association of Openness to Experience with personal accomplishment (Deary et al., 1996; Zellars et al., 2000) and professional efficacy (Morgan & De Bruin, 2010), whereas a negative relationship with depersonalization (Zellars et al., 2000).

As for empathy, it has been proven to be important for the provision of high-quality and effective care in healthcare students and professionals (Ardenghi et al., 2024a; Decety & Jackson, 2004; Mercer & Reynolds, 2002). In healthcare education, empathy has been associated with several psychological aspects relevant to the clinical practice such as attachment style (Ardenghi et al., 2020), emotional intelligence (Ardenghi, Rampoldi, et al., 2022; Donisi et al., 2022), emotion regulation (Ardenghi, Russo, et al., 2021), dispositional mindfulness (Ardenghi, Rampoldi, et al., 2021; Ardenghi, Russo, et al., 2022), patient-centered orientation (Ardenghi et al., 2019, 2024b), personal values (Ardenghi, Luciani, et al., 2021; Ardenghi, Rampoldi, et al., 2023; Luciani et al., 2020), self-efficacy and personality (Barbaranelli et al., 2021), coping strategies (Ardenghi, Russo, et al., 2023), and well-being (Salvarani et al., 2019, 2020). Empathy can also lead to vulnerability for stress-related conditions such as compassion fatigue and emotional exhaustion (Figley, 2002) and burnout (Åström et al., 1987; Ferri et al., 2015). Nevertheless, the direction and nature of the relationship is not clear-cut (Picard et al., 2016), with empirical data showing both a negative and positive association between burnout and empathy (Mercer & Reynolds, 2002) and that different aspects of empathy (affective and cognitive) could relate differently to burnout, therefore, leading to different outcomes (Zenasni et al., 2012).

As for clinical-related environmental factors, findings suggest that a clinical environment characterized by caring attitudes positively affects well-being, self-confidence, and motivation in nursing students, decrease anxiety usually associated with clinical settings while facilitating the learning and protecting from fatigue and emotional distress (Arrigoni et al., 2012; Labrague et al., 2015; Lovecchio et al., 2015; Saarikoski et al., 2008). It is important that students perceive their learning environment as one built on mutual trust between faculty and students because students have identified that when they feel safe, respected, trusted and receive frequent feedback from faculty members, they feel more motivated and learn more effectively (Rowbotham, 2010; Tiberius & Billson, 1991). According to Watson's theory (Watson & Brewer, 2015), caring clinical instructors are those who express interest in the wellbeing and learning of their supervisees, listen to and share information with them, provide guidance according to needs, and who

are flexible in managing unexpected events. Proctor (Proctor, 1991) advanced that one of the main functions covered by clinical instructors is to support nursing students to cope better with the pressures of their work. Interactions with instructors and healthcare staff on the ward were found to cause some degree of stress (Timmins & Kaliszzer, 2002), but, no studies have explored yet the association between nursing students' burnout and their perception of instructor's caring (Wade & Kasper, 2006).

Research on burnout in nursing should pursue a thorough understanding of its predictors, encompassing both dispositional and environmental aspects (LaBelle, 2021). Furthering our understanding of the mechanisms underlying burnout in nursing students and detecting antecedents and factors could help academic institutions, administrators, and educators to tackle burnout and develop interventions to protect nursing students' health and well-being during their professional training process. Therefore, the aims of this study were:

- 1) to evaluate the contribution of personality traits and the affective and cognitive dimensions of empathy in predicting burnout in nursing students;
- 2) to investigate if and to what extent the perception of instructor's caring predict burnout beyond the effect of socio-demographics, personality traits, and empathy dimensions.

In particular, we expected that:

- 1) Agreeableness, Conscientiousness, Extraversion, and Openness to Experience had a negative association with nursing students' burnout, whereas Neuroticism had a positive correlation to burnout; the affective and cognitive dimensions of empathy were positively and negatively associated with burnout, respectively;
- 2) the perception of one's own instructor as capable to create a supportive learning climate by instilling confidence through caring, respecting students, and being flexible with them would be negatively correlated to burnout.

2. Methods

2.1. Participants and procedure

In Italy, the undergraduate program for nursing is three-years-long. At the study center, in order to graduate, nursing students must complete 1650 h (55 ECTS) of clinical practice so distributed: 300 h during the first year, 690 h in the second year, and 660 h in the third year. In a cross-sectional study design, four satellite campuses of a university in Northern Italy were involved. Participants were the whole population of undergraduate nursing students in their first, second, and third academic year. No exclusion criteria were applied. Between July and December 2021, after the compulsory yearly clinical internship was concluded, students were invited via posts on the University e-learning website to fill in an online survey that took about 20 min to be completed. Students' participation was voluntary, and participants were assured that their answers would be kept confidential and anonymous. All participants provided informed consent electronically. Ethical approval was received by the Ethical Committee of the study center (Protocol number: 0004266/21).

2.2. Measures

The study protocol encompassed socio-demographic and academic information such as sex assigned at birth, age, academic year, nationality, number of children, living arrangement, employment status, and household income perception. Furthermore, it included validated questionnaires to measure constructs of interest.

Personality was measured with the Italian validated version of the Ten Item Personality Inventory (TIPI) (Chiorri et al., 2015; Gosling et al.,

2003), a 10-item questionnaire developed from other well-established Big Five instruments which assesses the five personality traits: Agreeableness (TIPI-A) (e.g., “Sympathetic, warm”), Conscientiousness (TIPI-C) (e.g., “Dependable, self-disciplined”), Extraversion (TIPI-E) (e.g., “Extraverted, enthusiastic”), Neuroticism (TIPI-N) (e.g., “Anxious, easily upset”), and Openness to Experience (TIPI-OE) (e.g., “Open to new experiences, complex”). Each item contains two adjectives and is introduced by the phrase: “I see myself as:”. Each item is scored on a 7-point scale ranging from 1 (“strongly disagree”) to 7 (“strongly agree”).

Empathy was measured with the Italian validated version of the Brief version of the Interpersonal Reactivity Index (BIRI) (Albiero et al., 2006; Davis, 1983; Ingoglia et al., 2016). The four 4-item subscales of the BIRI measure Empathic Concern (BIRI-EC) (e.g., “I often have tender, concerned feelings for people less fortunate than me”), Personal Distress (BIRI-PD) (e.g., “In emergency situations, I feel apprehensive and ill-at-ease”), Perspective Taking (BIRI-PT) (e.g., “I try to look at everybody's side of a disagreement before I make a decision”), and Fantasy (BIRI-F) (e.g., “I really get involved with the feelings of the characters in a novel”). As the BIRI-F has been proven irrelevant to patient care (Hojat et al., 2005), it was excluded from this study. Each of the 16 item is scored on a 5-point Likert scale ranging from 1 (“does not describe me well”) to 5 (“describes me very well”).

The nursing students' perception of the last clinical internship instructor's caring was measured with the Italian validated version of the Nursing Students' Perception of Instructor Caring (NSPIC) (Arrigoni et al., 2017; Wade & Kasper, 2006). It is a questionnaire composed of 31 items divided into four dimensions: supportive learning climate (NSPIC-Support) (e.g., “Serves as a trusted resource for personal problem solving”), instills confidence through caring (NSPIC-Confidence) (e.g., “Is attentive to me when we communicate”), respectful sharing (NSPIC-Respect) (e.g., “Makes me feel like a failure”), and control vs flexibility (NSPIC-Control) (e.g., “Uses grades to maintain control of students”). Each item is scored on a 6-point Likert scale ranging from 1 (“strongly disagree”) to 6 (“strongly agree”).

Burnout was measured with the Italian validate version of the 19-item Copenhagen Burnout Inventory (CBI) (Fiorilli, 2015; Kristensen et al., 2005) which assesses three subdimensions of burnout: Personal Burnout (CBI-PB) (e.g., “How often do you feel tired?”), Work-related Burnout (CBI-WB) (e.g., “Do you feel worn out at the end of the working day?”), and Client-related Burnout (CBI-CB) (e.g., “Do you find it hard to work with patients?”). Each item is scored on a 5-point Likert scale ranging from 1 (“never”) to 5 (“always”).

2.3. Statistical analysis

Descriptive analysis included the calculation of the average values and the standard deviation of the study variables. *t*-Tests and analyses of variance (ANOVA) with Bonferroni post-hoc correction were used to contrast students' socio-demographics in CBI scores. Cohen's *d* and partial eta-squared (η_p^2) were calculated to estimate effect sizes for *t*-tests and ANOVA, respectively. Pearson's correlations were conducted to examine the relationships between CBI, age, TIPI, BIRI, and NSPIC. Three hierarchical regression models were performed to investigate the association of TIPI, BIRI, and NSPIC with each CBI subscale (CBI-PB, CBI-WB, and CBI-CB). For each regression model, TIPI and BIRI scores were introduced in Step 1, while NSPIC scores were added in Step 2. An increase in total CBI subscales' explained variance at Step 2 (ΔR^2) would mean that the inclusion of the NSPIC variables improved the prediction of CBI scores. Regression models were adjusted by socio-demographic variables significantly associated with CBI scores. Unstandardized beta (*B*), confidence interval (CI), *F*-test (*F*), adjusted *R*-squared (R^2), and R^2 -change (ΔR^2) for each step were provided. *P*-value was set at <0.05 for *t*-tests, ANOVAs, and zero-order correlations. Due to the high number of predictors in our regression models, Bonferroni correction was applied and statistical significance for regressions was set at a *p*-value of <0.001 . All analyses were performed using SPSS 26.

3. Results

3.1. Sample characteristics and differences in burnout levels

Out of the 775 undergraduate nursing students enrolled at the study University and invited to take part in the study, 361 accepted and completed the questionnaire (response rate = 46.6%). All students were Italian, with no children, and aged 19–45 [mean age = 22.37 years, standard deviation “SD” = 3.10]. Table 1 reports sample characteristics and differences in CBI subscales. Female students showed greater scores on CBI-PB [$t(314) = 2.146, p = .033, d = 0.32$] and CBI-WB [$t(314) = 2.462, p = .014, d = 0.41$] than male ones. Students reporting an insufficient household income obtained greater scores on CBI-PB [$F(3,312) = 4.622, p = .004, \eta_p^2 = 0.04$] and CBI-WB [$F(3,312) = 4.316, p = .005, \eta_p^2 = 0.04$] than their colleagues who reported a household income at least sufficient. No statistically significant associations were found between CBI-CB and socio-demographics. CBI subscales had not a statistically significant correlation to participants' age [$r < -0.08, p > .149$].

3.2. Association of burnout with personality, empathy, and perception of instructor's caring

Correlations among CBI subscales, TIPI, BIRI, and NSPIC scores are reported in Table 2.

Results of the hierarchical regressions exploring the effects of TIPI, BIRI, and NSPIC scores on CBI subscales are presented in Table 3. All

Table 1
Sample characteristics and differences in CBI scores.

Variable	N(%)	CBI-PB	CBI-WB	CBI-CB
		M(SD)	M(SD)	M(SD)
Sex				
Female	265 (83.9)	15.28 (4.22)	15.02 (4.13)	10.33 (2.84)
Male	51 (16.1)	13.88 (4.51)	13.51 (3.28)	11.00 (3.07)
Year of study				
First	73 (23.1)	15.32 (4.39)	14.51 (3.64)	10.41 (2.70)
Second	152 (48.1)	14.68 (4.25)	14.72 (4.31)	10.35 (3.02)
Third	91 (28.8)	15.47 (4.29)	15.09 (3.89)	10.60 (2.82)
Living arrangement				
Family of origin	270 (85.4)	15.01 (4.15)	14.75 (3.91)	10.40 (2.86)
Partner and/or kids	13(4.1)	15.07 (5.14)	14.69 (4.77)	11.54 (3.02)
With roommate(s)	20(6.3)	14.60 (4.91)	14.15 (4.02)	9.65 (2.32)
Alone	13(4.1)	16.62 (5.44)	16.31 (5.82)	11.23 (3.77)
Work and studying				
Only studying	223 (70.6)	14.73 (4.05)	14.69 (3.78)	10.35 (2.82)
Working and studying (mainly studying)	84 (26.6)	15.74 (4.74)	14.79 (4.50)	10.50 (2.98)
Working and studying (mainly working)	9(2.8)	16.78 (5.14)	16.89 (5.53)	11.89 (3.55)
Household income perception				
Inadequate	23(7.3)	18.04 (5.32)	17.17 (5.77)	11.65 (3.27)
Adequate	126 (39.9)	15.01 (4.37)	14.52 (3.90)	10.32 (2.90)
More than adequate	113 (35.8)	14.66 (3.87)	14.78 (3.82)	10.42 (2.99)
Excellent	18(5.7)	13.89 (3.76)	12.83 (2.99)	10.28 (2.22)

Notes. CBI-PB Personal Burnout, CBI-WB Work-related Burnout CBI-CB Client-related Burnout.

Table 2
Zero-order correlations among burnout, personality, empathy, and perception of instructor's caring.

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. CBI-PB	1	.71	.34	-.13	-.18	-.02	.40	-.17	.18	.37	-.09	-.10	-.08	.14	.17
2. CBI-WB	<.001	1	.48	-.18	-.13	-.05	.29	-.21	.09	.35	-.11	-.24	-.18	.26	.29
3. CBI-CB	<.001	<.001	1	-.29	-.18	-.015	.12	-.11	-.03	.18	-.19	-.19	-.14	.22	.23
4. TTPV-A	.023	.001	<.001	1	.24	-.28	-.17	.049	.361	-.05	.39	.19	.19	-.15	-.16
5. TTPV-C	.002	.023	.002	<.001	1	-.16	-.23	.02	.07	-.16	.13	.07	.07	-.11	-.03
6. TTPV-E	.796	.345	.792	<.001	.004	1	-.03	.39	-.03	-.22	-.09	-.02	-.05	.02	.05
7. TTPV-N	<.001	<.001	.037	.003	<.001	.547	1	-.22	.20	.51	-.06	-.15	-.14	.132	.112
8. TTPV-OE	.003	<.001	.052	.381	.777	<.001	<.001	1	-.01	-.31	.06	.07	.03	-.07	.01
9. BIRL-EC	.002	.111	.646	<.001	.250	.646	<.001	.961	1	.22	.35	.14	.10	-.05	-.05
10. BIRL-FD	<.001	<.001	.001	.410	.005	<.001	<.001	<.001	<.001	1	-.05	.04	.04	.05	.02
11. BIRL-PT	.126	.045	.001	<.001	.020	.089	.298	.263	<.001	.350	1	.09	.03	-.03	-.03
12. NSPIC-Support	.064	<.001	.001	<.001	.209	.682	.008	.229	.011	.508	.110	1	.88	-.68	-.55
13. NSPIC-Confidence	.146	.001	.014	<.001	.246	.392	.012	.582	.066	.469	.583	<.001	1	-.73	-.59
14. NSPIC-Respect	.012	<.001	<.001	.006	.044	.666	.019	.220	.378	.363	.619	<.001	<.001	1	.75
15. NSPIC-Control	.003	<.001	<.001	.005	.616	.391	.046	.985	.397	.690	.644	<.001	<.001	<.001	1
M(SD)	15.06(4.29)	14.78(4.04)	10.44(2.89)	5.63(1.01)	5.75(1.00)	3.79(1.66)	3.40(1.45)	5.08(1.07)	4.14(1.68)	2.21(1.75)	4.02(1.71)	4.95(1.99)	5.51(1.79)	1.78(1.87)	1.72(1.83)
α	.87	.79	.81	.71	.73	.74	.70	.75	.77	.70	.78	.85	.83	.78	.71

Notes. CBI-PB Personal Burnout, CBI-WB Work-related Burnout, CBI-CB Client-related Burnout, TIPI-A Agreeableness, TIPI-C Conscientiousness, TIPI-E Extraversion, TIPI-N Neuroticism, TIPI-OE Openness to Experience, BIRI-EC Empathic Concern, BIRI-PD Personal Distress, BIRI-PT Perspective Taking, NSPIC-Support Supportive learning climate, NSPIC-Confidence Instills confidence through caring, NSPIC-Respect Respectful sharing, NSPIC-Control Control vs flexibility, α Cronbach's alpha; Pearson's correlation coefficients are reported above the diagonal and p-values below the diagonal.

models were significant and explained from 18.8 % to 28.0 % of the variance in the CBI subscales. At Step 2, CBI-PB was positively associated with TIPI-N [B = 0.556, 95 % CI = 0.164–0.948] and BIRI-PD [B = 0.980, 95 % CI = 0.230–1.730]; CBI-WB was positively associated with BIRI-PD [B = 1.255, 95 % CI = 0.547–1.963] and NSPIC-Control [B = 1.056, 95 % CI = 0.287–1.825], and negatively associated with TIPI-OE [B = -0.471, 95 % CI = -0.920 to -0.023], NSPIC-Support [B = -0.986, 95 % CI = -1.942 to -0.030], and NSPIC-Confidence [B = -1.027, 95 % CI = -2.253–0.199]; CBI-CB was negatively associated with TIPI-A [B = -0.736, 95 % CI = -1.098 to -0.374], NSPIC-Support [B = -0.631, 95 % CI = -1.258 to -0.004], and NSPIC-Confidence [B = -0.845, 95 % CI = -1.687 to -0.002]. Beyond the effect of socio-demographics (sex and family income perception), TIPI, and BIRI, NSPIC scores collectively added 1.8 % of the explained variance in CBI-PB, 6.8 % of the explained variance in CBI-WB, and 5.1 % of the explained variance in CBI-CB.

4. Discussion

This study focused on both dispositional and environmental predictors of burnout in nursing students. In particular, using validated instruments, it aimed to further explore the contribution of personality traits and the affective and cognitive dimensions of empathy in predicting burnout in undergraduate nursing students and to investigate if and to what extent the perception of instructor's caring was a predictor of burnout beyond the effect of personality and empathy. The associations of socio-demographic variables with burnout facets were also analyzed and the relevant variables used as covariates in the prediction models.

4.1. Association between perception of instructor's caring and burnout

The perception of the instructor as inflexible, controlling of their students, and focused on patient care-related tasks rather than the patients' needs (NSPIC-Control) was a significant positive predictor of Work-related Burnout. Further, perceiving the instructor as kind, attentive and available to students, a trusted source of support for problem, and genuinely interested in patients and their care (NSPIC-Support and NSPIC-Confidence) was a protective factor for Work-related Burnout and Client-related Burnout. These findings are in line with those reporting that stress in clinical settings is reduced when nursing students have a positive relationship with their clinical instructors, when clinical instructors model effective communication, when instructors inform the staff about nursing students' skills levels, and when they set realistic goals for clinical experiences (Begum & Slavin, 2012; Reeve et al., 2013). Furthermore, as the regression coefficients of determination (ΔR^2) show, perception of instructor as caring is a greater protective factor for Work-related Burnout and Client-related Burnout compared to Personal Burnout highlighting the paramount importance of instructors' caring attitudes for nursing students' work-related wellbeing.

4.2. Association between personality traits and burnout

In our study, Agreeableness was a significant negative predictor of Client-related Burnout. Greater Agreeableness may encompass the stereotype of the ideal nurse, as altruism, nurturance, and caring characterize this personality trait. Individuals higher in Agreeableness may be more likely to evoke positive and favorable responses from patients and from the work environment. Furthermore, greater job satisfaction and

accomplishment have been reported in individuals scoring higher on this trait (Divinakumar et al., 2019; Judge et al., 2002). Weak and not significant associations were found between Conscientiousness and Extraversion traits and burnout dimensions. As Conscientiousness and Extraversion can be considered as non-affective-oriented variables while burnout dimensions are affective-oriented variables (Thoresen et al., 2003) the lack of strong and significant relationships between those variables could be explained. It can be argued that affective-oriented variables show stronger relationships with other affective-oriented variables than with non-affective variables (Weiss et al., 1999). A similar reasoning may also account for the significant relationship between Neuroticism and Personal Burnout in our study. The relationship between Neuroticism and burnout is the most documented (Bakker et al., 2006). Neuroticism is characterized by apprehension, low self-confidence, concern for interpersonal relationships, poor emotion regulation, and feelings of vulnerability (Costa & McCrae, 2008). Previous research (Bakker et al., 2006; Deary et al., 2003; Zellars et al., 2004) suggests that individuals with higher levels of Neuroticism are more prone to reporting emotional exhaustion. Investigating the link between burnout and personality in intensive-care nursing staff, individuals scoring higher on Neuroticism presented greater emotional exhaustion (Bühler & Land, 2003). Finally, Openness to Experience was a significant negative predictor of Work-related Burnout in our study. As Openness to Experience reflects cognitive flexibility and the capability to broaden and adjust one's own mental schemas, this personality trait may help to reconstruct psychological processes to experience more pleasant emotional states (Keltner & Haidt, 2003).

4.3. Association between empathy and burnout

Affective empathy emerged to be a risk factor for burnout in this study with Personal Distress predicting both Personal Burnout and Work-related Burnout. Sharing patients' emotions can result in personal distress, which refers to an aversive self-focused emotional response triggered by perceiving another person's emotional state (Decety & Lamm, 2006). Watching someone else experiencing pain triggers a significant portion of the observer's pain matrix, leading to feelings of empathetic concern and sympathy (Decety & Lamm, 2006). Yet, the same signals could function as a threat for the observer ultimately leading to personal distress or compassion fatigue (Decety et al., 2010). If nursing students fail to regulate their emotions adequately while interacting with patients, they may end up feeling emotionally drained over time (Cheng et al., 2007). Nursing students' difficulties to effectively manage their emotions in emergencies and intense interpersonal situations could lead to emotional exhaustion and lower personal accomplishment (Maslach et al., 2001). "Affective distance" between healthcare workers and their patients has been viewed as beneficial for upholding clinical neutrality and preserving professionals' emotional balance (Hojat et al., 2003).

4.4. Association between socio-demographics and burnout

Being female and perceiving the household income as insufficient were associated with higher levels of Personal Burnout and Work-related Burnout. When considering sex-related differences in burnout, our findings are in line with Maslach et al. (Maslach et al., 2001) who observed that women score higher on emotional exhaustion than men. This difference may be explained by the Gender Role Theory (Eagly, 2013) which predicts that women tend to be more inclined to feel and

Table 3

Hierarchical regressions exploring the effects of personality traits, empathy dimensions, and perception of instructor's caring on burnout domains.

Variables	CBI-PB ^{a,b}		CBI-WB ^{a,b}		CBI-CB	
	Step 1 (B)	Step 2 (B)	Step 1 (B)	Step 2 (B)	Step 1 (B)	Step 2 (B)
TIPI-A	-0.475	-0.434	-0.674	-0.555	-0.803*	-0.736*
TIPI-C	-0.320	-0.345	-0.085	-0.120	-0.306	-0.299
TIPI-E	0.060	0.057	0.055	0.057	-0.145	-0.141
TIPI-N	0.590*	0.556*	0.239	0.130	-0.103	-0.157
TIPI-OE	-0.356	-0.348	-0.508*	-0.471*	-0.076	-0.057
BIRI-EC	0.740	0.781	0.250	0.374	0.422	0.475
BIRI-PD	0.986*	0.980*	1.178*	1.255*	0.469	0.493
BIRI-PT	-0.533	-0.514	-0.326	-0.321	-0.423	-0.410
NSPIC-Support		-0.446		-0.986*		-0.631*
NSPIC-Confidence		-0.728		-1.027*		-0.845*
NSPIC-Respect		0.001		0.061		0.278
NSPIC-Control		0.737		1.056*		0.525
F	9.339*	7.210*	7.259*	7.361*	6.104*	5.847*
R ²	0.258	0.276	0.212	0.280	0.137	0.188
ΔR ²	0.018		0.068		0.051	

Notes. CBI-PB Personal Burnout, CBI-WB Work-related Burnout, CBI-CB Client-related Burnout, TIPI-A Agreeableness, TIPI-C Conscientiousness, TIPI-E Extraversion, TIPI-N Neuroticism, TIPI-OE Openness to Experience, BIRI-EC Empathic Concern, BIRI-PD Personal Distress, BIRI-PT Perspective Taking, NSPIC-Support Supportive learning climate, NSPIC-Confidence Instills confidence through caring, NSPIC-Respect Respectful sharing, NSPIC-Control Control vs flexibility.

* $p < .001$.

^a Results controlled for sex.

^b Results controlled for family income perception.

exhibit feelings of emotional and physical fatigue, such as emotional exhaustion, as they are socially conditioned to express their emotions. Conversely, men are more prone to disengage and withdraw when faced with stress as they were culturally guided to conceal their emotions. The general public as well as trained healthcare professionals commonly link emotion-expressive behaviors with femininity, viewing them as indicators of psychological fragility and distress, while attributing emotion-suppressive behaviors to masculinity, strength, and psychological adjustment (Widiger & Spitzer, 1991). Implicit or explicit beliefs that women are more likely to suffer from burnout than men may translate into work discrimination against women, and may prevent to recognize burnout in men. If female employees are perceived as disproportionately more likely to burnout than their male counterpart, they may not be considered for challenging assignments and promotions fairly (Purvanova & Muros, 2010). On the other hand, assuming that burnout is largely confined to the female world may lead to underdiagnoses and undertreatment in men (Wilcox, 1992).

As for our findings on the perception of the household income as a predictor of burnout, low socioeconomic status (consisting of numerous factors, including household income) has been frequently reported to be a risk factor for inadequate socio-emotional development which in turn increases vulnerability to psychological issues (Bromberger et al., 2017). Our findings are coherent with the Family Investment Theory (Conger & Donnellan, 2007), which posits that students hailing from families with a higher socio-economic status, compared to those with low socio-economic status families, have greater access to resources which are beneficial for academic progress and well-being. The reduced access to beneficial resources and protective factors makes students from low socio-economic status families at greater risk for negative emotional, attitudinal, and behavioral responses to stress arising from academic challenges and pressure (Frydenberg et al., 2004; Tuominen-Soini & Salmela-Aro, 2014). In their review, Andrew et al. (Andrew et al., 2015) confirmed that the major stressors for nursing students were time demands of family and financial concerns.

4.5. Strengths and limitations

The study presents some limitations that need to be considered. First of all, the cross-sectional design does not allow long-term changes to be detected, nor causal inferences to be made. Being burnout a process,

longitudinal data are needed to establish causality among the study variables. A second limitation of this study lies in the relatively small sample and in the defined geographic location of the study centers which lessens the generalizability of our results. Furthermore, we used self-reported measurements which suffer from specific limitations and may lead to specific biases linked to participants' introspective ability or social desirability and expectation. A further potential limitation of this study is the variability introduced by instructor attitudes, personal perceptions, and individual capabilities. Additionally, nursing students' perceptions of insufficient household income may vary significantly due to factors such as debt-to-income ratios, pending expenses, academic stress, and the availability of financial loan support. These factors could influence their responses and potentially impact the generalizability of the study findings. Another possible source of caution in considering the study findings is the limited response rate. Nevertheless, we used internationally validated and reliable measures extensively utilized in nursing education research thereby allowing cross-national comparisons and strengthening the study conclusions. A strength and novelty element of the present study lies in the focus on the perception of the instructor's caring as a predictor of burnout in nursing students introducing this aspect in the research line on the determinants of burnout in healthcare students.

5. Conclusions

The present study has important theoretical and practical implications for developing interventions for burnout in undergraduate nursing students. Our findings extend the existing literature by offering important data on the positive role of the perception of instructor's caring on burnout in nursing students above and beyond the effect of their socio-demographic (i.e., sex and socio-economic factor) and dispositional (i.e., personality and empathy) characteristics. Usually, interventions to prevent or reduce burnout in academic settings are aimed at group and individual level by promoting awareness of the impact of one's own dispositional characteristics in empathic interpersonal settings. The present study suggests that interventions aiming at reducing risk of burnout in nursing students may achieve better results by including efforts to foster caring relationships between clinical instructors and their students. Furthermore, our data could help Nursing Schools to better select and train clinical instructors, to equip them with the

appropriate knowledge and tools to establish a caring relationship with their students. An assessment of the caring attitudes of instructors can be beneficial to personalize and better target their training. We also advance the possibility to include a routine assessment of empathy and personality traits in nursing students to detect individuals at higher risk of burnout before the clinical internship and to monitor them throughout the academic training.

CRedit authorship contribution statement

Stefano Ardenghi: Writing – original draft, Project administration, Methodology, Investigation, Data curation, Conceptualization. **Michela Luciani:** Writing – original draft, Project administration, Methodology, Investigation, Data curation, Conceptualization. **Selena Russo:** Writing – review & editing, Methodology, Conceptualization. **Giulia Rampoldi:** Writing – review & editing, Methodology, Conceptualization. **Marco Bani:** Writing – review & editing, Methodology, Conceptualization. **Davide Ausili:** Writing – review & editing, Supervision, Methodology, Conceptualization. **Stefania Di Mauro:** Writing – review & editing, Supervision, Methodology, Conceptualization. **Maria Grazia Stropparava:** Writing – review & editing, Supervision, Methodology, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

- Aguayo, R., Cañadas, G., Assbaa-Kaddouri, L., Cañadas-De La Fuente, G., Ramírez-Baena, L., & Ortega-Campos, E. (2019, Feb 27). A risk profile of sociodemographic factors in the onset of academic burnout syndrome in a sample of university students. *International Journal of Environmental Research and Public Health*, 16(5), 707.
- Alarcon, G., Eschleman, K. J., & Bowling, N. A. (2009, Jul). Relationships between personality variables and burnout: A meta-analysis. *Work and Stress*, 23(3), 244–263.
- Albiero, P., Ingoglia, S., & Lo, C. A. (2006). A contribution to the Italian validation of the Interpersonal Reactivity Index. *Test Psicométrica Metodol.*, 13(2), 107–125.
- Andrew, L., Maslin-Prothero, S. E., Costello, L., Dare, J., & Robinson, K. (2015, Dec). The influence of intimate partnerships on nurse student progression: An integrative literature review. *Nurse Education Today*, 35(12), 1212–1220.
- Ardenghi, S., Luciani, M., Rampoldi, G., Ausili, D., Bani, M., Di Mauro, S., et al. (2021, May). Personal values among first-year medical and nursing students: A cross-sectional comparative study. *Nurse Education Today*, 100, Article 104827.
- Ardenghi, S., Rampoldi, G., Bani, M., & Stropparava, M. G. (2020, May). Attachment styles as predictors of self-reported empathy in medical students during pre-clinical years. *Patient Education and Counseling*, 103(5), 965–970.
- Ardenghi, S., Rampoldi, G., Bani, M., & Stropparava, M. G. (2023, Jan). Personal values as early predictors of emotional and cognitive empathy among medical students. *Current Psychology*, 42(1), 253–261.
- Ardenghi, S., Rampoldi, G., Montelisciani, L., Antolini, L., Donisi, V., Perlini, C., et al. (2022, Sep). Emotional intelligence as a mediator between attachment security and empathy in pre-clinical medical students: A multi-center cross-sectional study. *Patient Education and Counseling*, 105(9), 2880–2887.
- Ardenghi, S., Rampoldi, G., Pepe, A., Bani, M., Gritti, P., & Stropparava, M. G. (2019, Aug 31). Assessing patient-centeredness among medical students: The Italian translation and validation of the patient-practitioner orientation scale. *BPA Appl Psychol Bull.*, 67(285), 51–61.
- Ardenghi, S., Rampoldi, G., Pepe, A., Bani, M., Salvarani, V., & Stropparava, M. G. (2021, Mar 15). An exploratory cross-sectional study on the relationship between dispositional mindfulness and empathy in undergraduate medical students. *Teaching and Learning in Medicine*, 33(2), 154–163.
- Ardenghi, S., Russo, S., Bani, M., Rampoldi, G., & Stropparava, M. G. (2021, Nov 9). The role of difficulties in emotion regulation in predicting empathy and patient-centeredness in pre-clinical medical students: A cross-sectional study. *Psychology, Health & Medicine*, 1–15.
- Ardenghi, S., Russo, S., Bani, M., Rampoldi, G., & Stropparava, M. G. (2023, Mar 1). Supporting students with empathy: the association between empathy and coping strategies in pre-clinical medical students. *Current Psychology [Internet]* [cited 2023 Apr 28]; Available from: <https://link.springer.com/10.1007/s12144-023-04397-4>.
- Ardenghi, S., Russo, S., Luciani, M., Salvarani, V., Rampoldi, G., Bani, M., et al. (2022, Feb 8). The association between dispositional mindfulness and empathy among undergraduate nursing students: A multicenter cross-sectional study. *Current Psychology [Internet]* [cited 2023 Apr 27]; Available from: <https://link.springer.com/10.1007/s12144-022-02829-1>.
- Ardenghi, S., Russo, S., Rampoldi, G., Bani, M., & Stropparava, M. G. (2024, Apr 25). Does medical curriculum impact on empathy? A longitudinal study in a sample of undergraduate medical students. *Medical Science Educator [Internet]* [cited 2024 Jul 20]; Available from: <https://link.springer.com/10.1007/s40670-024-02053-5>.
- Ardenghi, S., Russo, S., Rampoldi, G., Bani, M., & Stropparava, M. G. (2024, Jan). Medical students' attitude toward patient-centeredness: A longitudinal study. *Patient Education and Counseling*, 118, Article 108003.
- Arrigoni, C., Miazza, D., Gerra, M. T., & Pelissero, G. (2012, Mar). Prevention in the workplace and training of personnel: New methodological approaches. *Journal of Preventive Medicine and Hygiene*, 53(1), 14–19.
- Arrigoni, C., Puci, M., Grugnetti, A. M., Collivasone, L., Fenizia, E., Borrelli, P., et al. (2017, Dec). Italian version of Nursing Students' Perception of Instructor Caring (I-NSPIC): Assessment of reliability and validity. *BMC Medical Education*, 17(1), 218.
- Åström, S., Norberg, A., Nilsson, M., & Winblad, B. (1987, Sep 12). Tedium among personnel working with geriatric patients. *Scandinavian Journal of Caring Sciences*, 1(3–4), 125–132.
- Bakker, A. B., Van Der Zee, K. I., Lewig, K. A., & Dollard, M. F. (2006, Feb). The relationship between the Big Five personality factors and burnout: A study among volunteer counselors. *The Journal of Social Psychology*, 146(1), 31–50.
- Bani, M., Russo, S., Cardinale, C., Ardenghi, S., Rampoldi, G., Luciani, M., Ausili, D., Di Mauro, S., & Stropparava, M. G. (2023). "Jumping into the COVID-19 arena": The professional transition into clinical practice of new graduate nurses in Italy at time of COVID-19. *Journal of Clinical Nursing*, 32, 3898–3908. <https://doi.org/10.1111/jocn.16554>
- Barbaranelli, C., Ghezzi, V., Ardenghi, S., Caiaffa, M. F., Muraro, R., Cavaggoni, G., et al. (2021, Sep). The contribution of personality traits and self-efficacy beliefs to medical students' empathy. *TPM - Test Psychom Methodol Appl Psychol.*, 28(3), 313–327.
- Begum, S., & Slavín, H. (2012, Apr). Perceptions of "caring" in nursing education by Pakistani nursing students: An exploratory study. *Nurse Education Today*, 32(3), 332–336.
- Bromberger, J. T., Schott, L. L., Matthews, K. A., Kravitz, H. M., Harlow, S. D., & Montez, J. K. (2017, Aug). Childhood socioeconomic circumstances and depressive symptom burden across 15 years of follow-up during midlife: Study of Women's Health Across the Nation (SWAN). *Archives of Women's Mental Health*, 20(4), 495–504.
- Bühler, K. E., & Land, T. (2003, Jan). Burnout and personality in intensive care: An empirical study. *Hospital Topics*, 81(4), 5–12.
- Cañadas-De La Fuente, G. A., Vargas, C., San Luis, C., García, I., Cañadas, G. R., & De La Fuente, E. I. (2015, Jan). Risk factors and prevalence of burnout syndrome in the nursing profession. *International Journal of Nursing Studies*, 52(1), 240–249.
- Cheng, Y., Lin, C. P., Liu, H. L., Hsu, Y. Y., Lim, K. E., Hung, D., et al. (2007, Oct). Expertise modulates the perception of pain in others. *Current Biology*, 17(19), 1708–1713.
- Chiorri, C., Bracco, F., Piccinno, T., Modafferi, C., & Battini, V. (2015, May 1). Psychometric properties of a revised version of the ten item personality inventory. *European Journal of Psychological Assessment*, 31(2), 109–119.
- Conger, R. D., & Donnellan, M. B. (2007, Jan 1). An interactionist perspective on the socioeconomic context of human development. *Annual Review of Psychology*, 58(1), 175–199.
- Costa, P. T., & McCrae, R. R. (2008). The Revised NEO Personality Inventory (NEO-PI-R). In *The SAGE Handbook of Personality Theory and Assessment: Volume 2 — Personality Measurement and Testing [Internet]* (pp. 179–198). 1 Oliver & #x0027;s Yard, 55 City Road, London EC1Y 1SP United Kingdom: SAGE Publications Ltd [cited 2023 Apr 29]. Available from: https://sk.sagepub.com/reference/hdbk_personalitytheory2/n9.xml
- Da Silva, R. M., Goulart, C. T., Lopes, L. F. D., Serrano, P. M., Costa, A. L. S., & De Azevedo, G. L. (2014, Dec). Hardy personality and burnout syndrome among nursing students in three Brazilian universities—An analytic study. *BMC Nursing*, 13(1), 9.
- Dante, A., Palese, A., & Lancia, L. (2011). Successo e insuccesso accademico degli studenti infermieri, tendenze internazionali e nazionali: revisione della letteratura. *L'infermiere*, 48(4), 35–42.
- Davis, M. H. (1983, Jan). Measuring individual differences in empathy: Evidence for a multidimensional approach. *Journal of Personality and Social Psychology*, 44(1), 113–126.
- Deary, I. J., Blenkin, H., Agius, R. M., Endler, N. S., Zealley, H., & Wood, R. (1996, Feb). Models of job-related stress and personal achievement among consultant doctors. *British Journal of Psychology*, 87(1), 3–29.
- Deary, I. J., Watson, R., & Hogston, R. (2003, Jul). A longitudinal cohort study of burnout and attrition in nursing students: *Burnout and attrition in nursing students*. *Journal of Advanced Nursing*, 43(1), 71–81.
- Decety, J., & Jackson, P. L. (2004, Jun). The functional architecture of human empathy. *Behavioral and Cognitive Neuroscience Reviews*, 3(2), 71–100.
- Decety, J., & Lamm, C. (2006). Human empathy through the lens of social neuroscience. *Scientific World Journal*, 6, 1146–1163.
- Decety, J., Yang, C. Y., & Cheng, Y. (2010, May). Physicians down-regulate their pain empathy response: An event-related brain potential study. *NeuroImage*, 50(4), 1676–1682.
- Divinakumar, K., Bhat, P., Prakash, J., & Srivastava, K. (2019). Personality traits and its correlation to burnout in female nurses. *Industrial Psychiatry Journal*, 28(1), 24.
- Donisi, V., Perlini, C., Mazzi, M. A., Rimondini, M., Garbin, D., Ardenghi, S., et al. (2022, Sep). Training in communication and emotion handling skills for students attending medical school: Relationship with empathy, emotional intelligence, and attachment style. *Patient Education and Counseling*, 105(9), 2871–2879.
- Eagly, A. H. (2013). *Sex differences in social behavior: A social-role interpretation [Internet]* (1st ed.). Psychology Press [cited 2023 Apr 29]. Available from: <https://www.taylorfrancis.com/books/9780203781906>.

- Ferri, P., Guerra, E., Marcheselli, L., Cunico, L., & Di Lorenzo, R. (2015, Sep 9). Empathy and burnout: An analytic cross-sectional study among nurses and nursing students. *Acta Bio-Medica Atenei Parm.*, (86 Suppl 2), 104–115.
- Figley, C. R. (2002, Nov). Compassion fatigue: Psychotherapists' chronic lack of self care. *Journal of Clinical Psychology*, 58(11), 1433–1441.
- Fiorilli, C. (2015). Copenhagen Burnout Inventory (CBI): A validation study in an Italian teacher group. *TPM - Test Psychom Methodol Appl Psychol*, 4, 537–551.
- Frydenberg, E., Lewis, R., Bugalski, K., Cotta, A., McCarthy, C., Luscombe-smith, N., et al. (2004, Jun). Prevention is better than cure: Coping skills training for adolescents at school. *Educational Psychology in Practice*, 20(2), 117–134.
- Galbraith, N. D., & Brown, K. E. (2011, Apr). Assessing intervention effectiveness for reducing stress in student nurses: Quantitative systematic review: Reducing stress in student nurses. *Journal of Advanced Nursing*, 67(4), 709–721.
- Garrosa, E., Moreno-Jiménez, B., Liang, Y., & González, J. L. (2008, Mar). The relationship between socio-demographic variables, job stressors, burnout, and hardy personality in nurses: An exploratory study. *International Journal of Nursing Studies*, 45(3), 418–427.
- González-Romá, V., Schaufeli, W. B., Bakker, A. B., & Lloret, S. (2006, Feb). Burnout and work engagement: Independent factors or opposite poles? *Journal of Vocational Behavior*, 68(1), 165–174.
- Gosling, S. D., Rentfrow, P. J., & Swann, W. B. (2003, Dec). A very brief measure of the Big-Five personality domains. *J Res Personal*, 37(6), 504–528.
- Gustafsson, G., Persson, B., Eriksson, S., Norberg, A., & Strandberg, G. (2009, Oct). Personality traits among burnt out and non-burnt out health-care personnel at the same workplaces: A pilot study. *International Journal of Mental Health Nursing*, 18(5), 336–348.
- Henderson, D., Sewell, K. A., & Wei, H. (2020, Jan). The impacts of faculty caring on nursing students' intent to graduate: A systematic literature review. *Int J Nurs Sci*, 7(1), 105–111.
- Hojat, M., Gonnella, J. S., Mangione, S., Nasca, T. J., & Magee, M. (2003, Mar). Physician empathy in medical education and practice: Experience with the Jefferson scale of physician empathy. *Semin Integr Med*, 1(1), 25–41.
- Hojat, M., Mangione, S., Kane, G. C., & Gonnella, J. S. (2005, Nov). Relationships between scores of the Jefferson Scale of Physician Empathy (JSPE) and the Interpersonal Reactivity Index (IRI). *Medical Teacher*, 27(7), 625–628.
- Hunt, P. A., Denieffe, S., & Gooney, M. (2017, Mar). Burnout and its relationship to empathy in nursing: A review of the literature. *Journal of Research in Nursing*, 22(1–2), 7–22.
- Hwang, E., & Kim, J. (2022, Dec). Factors affecting academic burnout of nursing students according to clinical practice experience. *BMC Medical Education*, 22(1), 346.
- Ingolia, S., Lo Coco, A., & Albiero, P. (2016, Sep 2). Development of a Brief Form of the Interpersonal Reactivity Index (B-IRI). *Journal of Personality Assessment*, 98(5), 461–471.
- Judge, T. A., Heller, D., & Mount, M. K. (2002). Five-factor model of personality and job satisfaction: A meta-analysis. *The Journal of Applied Psychology*, 87(3), 530–541.
- Keltner, D., & Haidt, J. (2003, Jan). Approaching awe, a moral, spiritual, and aesthetic emotion. *Cogn Emot*, 17(2), 297–314.
- Kristensen, T. S., Borritz, M., Villadsen, E., & Christensen, K. B. (2005, Jul). The Copenhagen Burnout Inventory: A new tool for the assessment of burnout. *Work and Stress*, 19(3), 192–207.
- LaBelle, S. (2021). Burnout in the nursing profession: Extant knowledge and future directions for research and practice. *Nurs Commun*, 1(1).
- Labrague, L. J., McEnroe-Petitte, D. M., Papatheanasiou, I. V., Edet, O. B., & Arulappan, J. (2015, Jul). Impact of instructors' caring on students' perceptions of their own caring behaviors: students' caring. *Journal of Nursing Scholarship*, 47(4), 338–346.
- Lovecchio, C. P., DiMattio, M. J. K., & Hudacek, S. (2015, Jul). Predictors of Undergraduate Nursing Student Satisfaction with Clinical Learning Environment: A Secondary Analysis. *Nurs Educ Perspect*, 36(4), 252–254.
- Luciani, M., Rampoldi, G., Ardenghi, S., Bani, M., Merati, S., Ausili, D., et al. (2020, Sep). Personal values among undergraduate nursing students: A cross-sectional study. *Nursing Ethics*, 27(6), 1461–1471.
- Maslach, C., & Jackson, S. E. (1981, Apr). The measurement of experienced burnout. *Journal of Organizational Behavior*, 2(2), 99–113.
- Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001, Feb). Job burnout. *Annual Review of Psychology*, 52(1), 397–422.
- McVicar, A. (2003, Dec). Workplace stress in nursing: A literature review: *Workplace stress in nursing*. *Journal of Advanced Nursing*, 44(6), 633–642.
- Mercer, S. W., & Reynolds, W. J. (2002, Oct). Empathy and quality of care. *Br J Gen Pract*. *The Journal of the Royal College of General Practitioners*, (52 Suppl(Suppl)), S9–12.
- Morgan, B., & De Bruin, K. (2010, Jun). The relationship between the Big Five personality traits and burnout in South African university students. *South Afr J Psychol*, 40(2), 182–191.
- Picard, J., Catu-Pinault, A., Boujut, E., Botella, M., Jaury, P., & Zenasni, F. (2016, Apr 2). Burnout, empathy and their relationships: A qualitative study with residents in general medicine. *Psychology, Health & Medicine*, 21(3), 354–361.
- Piedmont, R. L. (1993, Dec). A longitudinal analysis of burnout in the health care setting: The role of personal dispositions. *Journal of Personality Assessment*, 61(3), 457–473.
- Proctor, B. (1991). On being a trainer. In W. Dryden, & B Thorne (Eds.), *Training and Supervision for Counselling in Action* (pp. 49–73). Sage.
- Purvanova, R. K., & Muros, J. P. (2010, Oct). Gender differences in burnout: A meta-analysis. *Journal of Vocational Behavior*, 77(2), 168–185.
- Reeve, K. L., Shumaker, C. J., Yearwood, E. L., Crowell, N. A., & Riley, J. B. (2013, Apr). Perceived stress and social support in undergraduate nursing students' educational experiences. *Nurse Education Today*, 33(4), 419–424.
- Rowbotham, M. A. (2010, Jan 12). Teacher perspectives and the psychosocial climate of the classroom in a traditional BSN program. *International Journal of Nursing Education Scholarship [Internet]* [cited 2023 Apr 28];7(1). Available from: <https://www.degruyter.com/document/doi/10.2202/1548-923X.1808/html>.
- Rudman, A., & Gustavsson, J. P. (2012, Aug). Burnout during nursing education predicts lower occupational preparedness and future clinical performance: A longitudinal study. *International Journal of Nursing Studies*, 49(8), 988–1001.
- Saarikoski, M., Isoaho, H., Warne, T., & Leino-Kilpi, H. (2008, Aug). The nurse teacher in clinical practice: Developing the new sub-dimension to the clinical learning environment and supervision (CLES) scale. *International Journal of Nursing Studies*, 45(8), 1233–1237.
- Salvarani, V., Ardenghi, S., Rampoldi, G., Bani, M., Cannata, P., Ausili, D., et al. (2020, Mar). Predictors of psychological distress amongst nursing students: A multicenter cross-sectional study. *Nurse Educ Pr*, 44, Article 102758.
- Salvarani, V., Rampoldi, G., Ardenghi, S., Bani, M., Blasi, P., Ausili, D., et al. (2019, May). Protecting emergency room nurses from burnout: The role of dispositional mindfulness, emotion regulation and empathy. *Journal of Nursing Management*, 27(4), 765–774.
- Schaufeli, W. B., Martínez, I. M., Pinto, A. M., Salanova, M., & Bakker, A. B. (2002, Sep). Burnout and engagement in university students: A cross-national study. *Journal of Cross-Cultural Psychology*, 33(5), 464–481.
- Sonnenschein, M., Sorbi, M. J., Van Doornen, L. J. P., Schaufeli, W. B., & Maas, C. J. M. (2007, Apr). Evidence that impaired sleep recovery may complicate burnout improvement independently of depressive mood. *Journal of Psychosomatic Research*, 62(4), 487–494.
- Teasdale, K., Brocklehurst, N., & Thom, N. (2001, Jan 26). Clinical supervision and support for nurses: An evaluation study. *Journal of Advanced Nursing*, 33(2), 216–224.
- Thoresen, C. J., Kaplan, S. A., Barsky, A. P., Warren, C. R., & De Chermont, K. (2003). The affective underpinnings of job perceptions and attitudes: A meta-analytic review and integration. *Psychological Bulletin*, 129(6), 914–945.
- Tiberius, R. G., & Billson, J. M. (1991). The social context of teaching and learning. *New Directions for Teaching and Learning*, 1991(45), 67–86.
- Timmins, F., & Kaliszser, M. (2002, Apr). Aspects of nurse education programmes that frequently cause stress to nursing students – Fact-finding sample survey. *Nurse Education Today*, 22(3), 203–211.
- Tuominen-Soini, H., & Salmela-Aro, K. (2014, Mar). Schoolwork engagement and burnout among Finnish high school students and young adults: Profiles, progressions, and educational outcomes. *Developmental Psychology*, 50(3), 649–662.
- Wade, G. H., & Kasper, N. (2006, May). Nursing Students' perceptions of instructor caring: An instrument based on Watson's theory of transpersonal caring. *The Journal of Nursing Education*, 45(5), 162–168.
- Watson, D., & Hubbard, B. (1996, Dec). Adaptational style and dispositional structure: Coping in the context of the five-factor model. *Journal of Personality*, 64(4), 737–774.
- Watson, J., & Brewer, B. B. (2015, May). Caring science research: Criteria, evidence, and measurement. *JONA J Nurs Adm*, 45(5), 235–236.
- Wei, H., Dorn, A., Hutto, H., Webb Corbett, R., Haberstroh, A., & Larson, K. (2021, Jul). Impacts of nursing student burnout on psychological well-being and academic achievement. *The Journal of Nursing Education*, 60(7), 369–376.
- Wei, H., Henderson, D., Peery, A., & Andrews, A. (2021, Jun 1). Nursing students' perceptions of faculty caring as a predictor of students' caring behaviors. *International Journal of Human Caring*, 25(2), 123–130.
- Weiss, H. M., Nicholas, J. P., & Daus, C. S. (1999, Apr). An examination of the joint effects of affective experiences and job beliefs on job satisfaction and variations in affective experiences over time. *Organizational Behavior and Human Decision Processes*, 78(1), 1–24.
- Widiger, T. A., & Spitzer, R. L. (1991, Jan). Sex bias in the diagnosis of personality disorders: Conceptual and methodological issues. *Clinical Psychology Review*, 11(1), 1–22.
- Wilcox, V. L. (1992, Jul). Effects of patients' age, gender, and depression on medical students' beliefs, attitudes, intentions, and behavior. *Journal of Applied Social Psychology*, 22(14), 1093–1110.
- Zellars, K. L., Hochwarter, W. A., Perrewe, P. L., Hoffman, N., & Ford, E. W. (2004, May). Experiencing job burnout: The roles of positive and negative traits and states. *Journal of Applied Social Psychology*, 34(5), 887–911.
- Zellars, K. L., Perrewe, P. L., & Hochwarter, W. A. (2000, Aug). Burnout in health care: The role of the five factors of personality. *Journal of Applied Social Psychology*, 30(8), 1570–1598.
- Zenasni, F., Boujut, E., Woerner, A., & Sultan, S. (2012, Jul). Burnout and empathy in primary care: Three hypotheses. *The British Journal of General Practice*, 62(600), 346–347.