Received: 20 August 2021 | Revised: 20 January 2022 | Accepted: 14 February 2022

DOI: 10.1111/jan.15231

ORIGINAL RESEARCH: EMPIRICAL RESEARCH - QUANTITATIVE

JAN Leading Global Nursing Research WILEY

Self-efficacy, burnout and academic success in nursing students: A counterfactual mediation analysis

Giampiera Bulfone[1] | Paolo Iovino[1,2] | Rocco Mazzotta[1] | Michael Sebastian[3] | Loreana Macale[1] | Alessandro Sili[4] | Ercole Vellone[1] | Rosaria Alvaro[1]

[1]Department of Biomedicine and Prevention, University of Rome Tor Vergata, Rome, Italy

[2]Australian Catholic University Melbourne

[3]Our Lady of Good Counsel University, Tiranë, Albania

[4]Policlinico Tor Vergata, Rome, Italy

Correspondence
Rocco Mazzotta, Department of Biomedicine and Prevention, University of Rome Tor Vergata, Via Montpellier, 1 – 00133 Rome, Italy.
Email: rocco.mazzotta@uniroma2.it

Abstract

Aim: To test the mediating role of burnout in the relationship between self-efficacy and academic success in nursing students.

Design: This was a cross-sectional secondary analysis of longitudinal research aimed at exploring the academic success of nursing students.

Methods: We enrolled a convenience sample of nursing students attending 21 Italian baccalaureate nursing degree programmes. Data were collected from 2014 to the 2018–2019 academic year. We analysed the wave of data collected during the third year of the programme. The measurements were the Academic Nurse Self-Efficacy scale (ANSEs) and the Scale of Work Burnout (SWEBO). A mediation analysis with a counterfactual approach was performed.

Results: The participants (n = 556) had a median age of 20 years (IQR 19–22) and the majority was female [70.5% (392/556)]. Academic success was reached by 51.97% (289/556) of the students. The findings reveal a significant direct effect of self-efficacy on academic success and also a significant indirect effect of this relationship via burnout.

Conclusion: The mechanism by which self-efficacy influences academic performance in nursing students is more complex than a simple direct relationship. Universities should consider screening students for variables affecting academic success to decrease academic costs and increase ranking systems classification.

Impact: Nurses' professors should be engaged in strategies to promote self-efficacy. The area of intervention should be structured both during classes and internships, in tandem with the mentor and the clinical nurse.

KEYWORDS
burnout, nursing students, self-efficacy

1 | INTRODUCTION

Academic success of baccalaureate nursing students—defined as the ability of the nursing student to complete the programme on time (Bulfone, De Maria, et al., 2021; Lancia et al., 2018)—is a phenomenon of great interest all over the world. This definition of academic success has proven to be useful not only for measuring the students' achievement per se but also for monitoring university efficiency and academic costs (Beer & Lawson, 2017).

Psychosocial factors are identified as important determinants of academic success in nursing students. For example, previous research underlines that self-efficacy—the belief in one's own ability

to complete a task (Bandura, 1977)—is one of the most important psychosocial factors potentially predicting academic success (Bandura, 1977, 1995; Bouih et al., 2021; Schneider & Preckel, 2017).

Another example of factor is academic burnout, defined as the experience of energy depletion, emotional exhaustion, detachment, inadequacy and reduced efficacy (Maslach & Leiter, 1997; Maslach et al., 2001) in university students. Importantly, burnout has been shown to challenge academic success in nursing students. Specifically, it was observed that burnout tends to increase with each academic year (Watson et al., 2008). This is not surprising as nursing students are not entirely engaged to study processes only, but also in learning experiences across different health care settings and patients. The consequences of burnout are not limited to academic achievements, as they may also impact a student's future jobs (Aghajari et al., 2018).

Previous studies suggest that academic burnout can also be predicted by students' self-efficacy (Safarzaie et al., 2017). This gives a sufficient rationale for investigating a possible mediating mechanism of burnout in the relationship between self-efficacy and academic success in nursing students. More in-depth knowledge of this phenomenon, which to our knowledge has not been investigated so far, may help in designing interventions to enhance academic success and accommodate future nurses' availability in the health care system.

Therefore, the aim of this study is to analyse the role of burnout on the relationship between self-efficacy and academic success. The hypotheses of our study were as follows:

1. there is a direct effect of self-efficacy on academic success;
2. burnout mediates the relationship between self-efficacy and academic success (Figure 1).

2 | BACKGROUND

Academic success in nursing students is commonly measured as grade point average (GPA) (Wambuguh et al., 2016), as a score obtained on some exams (Wambuguh et al., 2016) or as the completion of the academic programme (Bulfone, De Maria, et al., 2021; Lancia et al., 2018; Wambuguh et al., 2016). Variables affecting academic success in nursing students can be distinguished by sociodemographic such as age, gender, working status and family commitment (Dante et al., 2015); pre-academic, as the grades in secondary school certifications (Dante et al., 2015; Wambuguh et al., 2016); academic, as scores in pre-admission tests, clinical training examination grades (Bulfone, De Maria, et al., 2021); and psychological, such as self-efficacy (Bandura, 1977; Bouih et al., 2021; Bulfone, De Maria, et al., 2021; Schneider & Preckel, 2017) and burnout (Aghajari et al., 2018; Maslach, 1998).

In academic contexts, self-efficacy is frequently referred to as academic self-efficacy (ASE), which is the students' judgements about their own abilities to achieve educational goals (Elias & MacDonald, 2007). Self-efficacy is well-known to be associated with academic success: indeed, students exhibiting higher self-efficacy also generally exhibit higher academic performance than their counterparts (Bandura, 1977, 1995; Bouih et al., 2021; Bulfone, De Maria, et al., 2021; Schneider & Preckel, 2017). However, in this relationship, Richardson et al. (2012) observed that self-efficacy only explains a small amount of the variance in academic success; additional evidence also suggests that the mechanism by which self-efficacy influences academic performance may be more complex than hypothesized; this evokes the opportunity that mediating factors might be involved in this mechanism. Another variable related to academic success is burnout (Maslach, 1998). Nursing students are particularly at risk of developing burnout (Labrague et al., 2018; Watson et al., 2008) due to the academic workload and the emotional involvement during clinical training (Lopes & Nihei, 2020). These situations can clearly affect memory, concentration and problem-solving abilities, thus leading to decreased learning, academic performance and retention (Madigan & Curran, 2021). There is evidence that when the students experience negative feelings about their abilities, this may lead to a lack of confidence about their own competence (i.e. 'self-efficacy crisis'); lack of confidence may in turn generate burnout (Safarzaie et al., 2017). Notably, although burnout was originally composed of three dimensions, Schaufeli and Taris (2005) revealed that at the core of burnout, there are exhaustion and cynicism. The third dimension (e.g., unfocalised or lack of efficacy) is not suggested as being part of the burnout dimension. In other words,

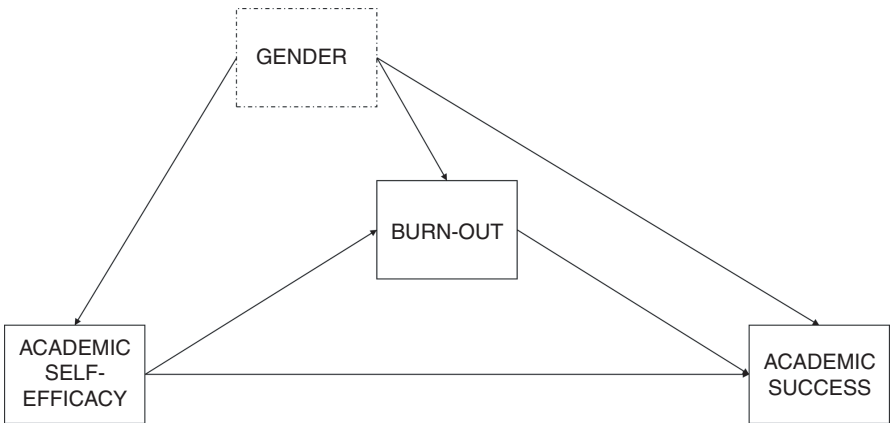

FIGURE 1 Model depicting the mediating role of burnout on the relationship between self-efficacy and academic success. Note: The rectangle with dashed lines indicates the covariate. The rectangles with continuous lines indicate the explanatory variable, mediator and response variable

lack of efficacy might play an antecedent role in the burnout process (Consiglio et al., 2014). Therefore, burnout can be characterized by reduced self-efficacy (Shoji et al., 2016), and this, in turn, can potentially affect academic success (Madigan & Curran, 2021). Watson et al. (2008) also showed that burnout tends to increase with each academic year, and this may exacerbate the possible detrimental influence on academic success.

To date, researchers have exclusively studied direct relationships between ASE and academic success; consequently, there is no evidence of burnout as a mediating role in such a relationship.

3 | THE STUDY

3.1 | Aim

The aim of this study was to test the mediating role of burnout in the relationship between self-efficacy and academic success in nursing students.

3.2 | Design

This was a cross-sectional secondary analysis of longitudinal research aimed at exploring the academic success of nursing students.

3.3 | Participants

We enrolled a convenience sample ($n = 2192$) of nursing students attending 21 Italian baccalaureate nursing degree Programmes which has an average annual participation of 800 students. The sample included two cohorts of students who started their programme in 2014–2015 and 2015–2016 academic year. Data were collected until the 2017–2018 academic year, and for the purpose of this study, we analysed only the wave of data collected during the third year of the programme. Students attending the third year of the programme was the only inclusion criteria adopted.

3.4 | Data collection

All the participants involved in the research were approached by an expert researcher who explained the purpose of the study and helped them to fill out a self-report paper-and-pencil questionnaire during class-hours. The questionnaire was composed of a sociodemographic part and a section with instruments measuring different variables; among them, we considered burnout, ASE and academic success. ASE was evaluated with the Academic Nurse Self-Efficacy scale (ANSEs); the score varied from 1 (completely unconfident) to 5 (completely confident), where a high score means a high ASE level (Bulfone et al., 2020). Burnout was evaluated with the Scale of Burnout of the Scale of Work Engagement and Burnout (SWEBO); the score varies from 1 to 4, with higher scores meaning higher burnout levels (Hultell & Gustavsson, 2010).

We considered only the cohort of students attending the third year of the programme because there are many academic duties in this period, such as exams, dissertations and the preparation for qualification exams.

3.5 | Ethical considerations

The research protocol was approved by the Internal Review Board. All participants were informed about the aims and procedures of the study and were asked to provide written informed consent. Participation was voluntary, and the students were told that they could withdraw or refuse to participate at any time during the investigation. They were also reassured of the confidential nature of their responses.

3.6 | Validity, reliability and rigour

The Academic Nurse Self-Efficacy scale (ANSEs) (Bulfone et al., 2020) is composed of 14 items with the four dimensions of auto-regulatory behaviour, external emotion management, sociality and internal emotion management. Cronbach's α was satisfactory for each dimension: (auto-regulatory behaviour [$\alpha = .72$], external emotion management [$\alpha = .83$], sociality [$\alpha = .73$] and internal emotion management [$\alpha = .80$] dimensions). Cronbach's α for the total scale was 0.84 (Bulfone et al., 2020). The SEM (standard error of measurement) was 0.69 and the SDD (smallest detectable difference) was 1.9 (26%).

For this study, we used the Scale of Work Burnout (SWB) (Hultell & Gustavsson, 2010), which consists of three dimensions: emotional exhaustion, cynicism or unfocalised. Each dimension is measured by three mood adjectives, resulting in a total of nine burnout items. The mood adjectives used to measure the three dimensions were derived from the theoretical frameworks of Maslach et al. (1996). We also tested this instrument on our sample of nursing students. Cronbach's α for the overall burnout scale was .886 (cynicism = .837; exhaustion = .792; unfocalised = .819).

For the purposes of this study, we defined *academic success* as the ability of the baccalaureate nursing students to complete their study on time (Bulfone, De Maria, et al., 2021; Lancia et al., 2018); in the Italian context, this should be reached at 3 years and one semester with respect to the beginning of the study programme. In this study, the variable was considered dichotomous, with values of yes or no depending on if the student completed or did not complete the studies in time, respectively.

3.7 | Statistical analysis

All the analyses were carried out using STATA MP version 16. Demographic characteristics of participants are displayed as means

(SD) or medians (IQR) for continuous variables (depending on the distribution), and absolute frequencies (%) for categorical variables.

To fit the mediation model, we used the STATA plug-in PARAMED (Emsley & Liu, 2013), which fits the regression models by simultaneously estimating the parameters alongside their 95% confidence intervals and p values. The cohort was restricted to those who had complete data on self-efficacy and burnout variables at the beginning of the third academic year.

Before carrying out the main analysis, patterns and possible reasons for missing values were investigated. Logistic regression was performed with demographic and psychosocial predictors as the explanatory variables and the missing indicator as the response variable. Three logistic regressions were performed for retrieving possible predictors of missingness on ASE and burnout variables.

A mediation analysis with a counterfactual approach was performed to understand the mediating effect of burnout on the relationship between ASE and academic success. The model is depicted in Figure 1. The counterfactual mediation analysis is conducted by deriving the corresponding natural and indirect effects, which are modelled by linear and logistic regression. Linear regression intervenes in the relationship between the explanatory variable and the mediator, whereas logistic regression is implemented in the relationship between the mediator and the response variable (Muthén et al., 2017).

The counterfactual mediation model estimates four effects (VanderWeele, 2015), which are briefly described hereafter. The pure natural direct effect (PNDE) is defined as the effect of change in the response when the exposure is changed from low to high levels, but the mediator is kept as if it would be under low levels of exposure. The pure natural indirect effect (PNIE) is the effect of change in the response when the mediator is changed from what it would be under low levels of exposure to what it would be under high levels of exposure, while the exposure is kept at low levels. The total natural direct effect (TNDE) is the effect on the response resulting from holding constant the mediator at the value it would be when observed under high levels of the exposure. The total natural indirect effect (TNIE) is the effect on the response by keeping the exposure at high levels and changing the mediator from the level it would be under low levels of exposure, to the level it would be under high levels of the exposure, while the exposure is kept at high levels (VanderWeele, 2015).

Two additional effects were also estimated: the conditional direct effect (CDE), or the effect of the exposure on the response when the mediator is at a predetermined fixed level, and the total effect (TE), which is the effect on the response obtained by changing the exposure values from high to low levels. To establish the high and low values of the predictor and mediator in the model, we used one standard deviation above and below the mean. This is because cut off scores of the instruments have not been established by the authors. Two models, one unadjusted and one adjusted for gender, were tested. The second mediation pathway was adjusted for gender because recurring findings indicate that females are significantly more successful than male nursing students (Dante et al., 2015). The fit of the two models was compared by assessing AIC (Akaike information criteria) and BIC (Bayesian information criteria) measures. In our study, the percentage of unsuccessful students occurred in more than 10% of the total events observed. Consequently, since the frequency of the event is not rare (VanderWeele, 2015), estimations (derived from a log-link function) were presented as risk ratios (RR), to avoid the tendency of the OR to exaggerate the RR estimation (Viera, 2008). The proportion mediated (PM) (VanderWeele, 2015) was computed to measure the amount of the burnout-mediating effect and expressed as a percentage.

TABLE 1 Characteristics of the sample and instruments' scores used in the model ($n = 556$)

Characteristics	
Age (years), median (IQR)	20.00 (19–22)
Female, *n* (%)	392 (70.50)
Having children, *n* (%)[a]	26 (4.77)
Working status, *n* (%)[b]	458 (82.37)
Civil status (single), *n* (%)[b]	524 (94.24)
Academic self-efficacy, mean (±SD)	3.64 (0.61)
Burn-out, mean (±SD)	1.86 (0.67)

Abbreviations: IQR, interquartile range; SD, standard deviation.
[a]Data available for 326 participants.
[b]Data available for 331 participants.

4 | RESULTS

4.1 | Characteristic of the sample

The characteristics of the sample (n = 556) are summarized in Table 1. They had a median age of 20 years (IQR 19–22). Most of the sample was female [70.5% (392/556)], 4.7% (26/556) had children, 82.37% (458/556) did not work and 94.24% (524/556) were single. Academic success was reached by 51.97% (289/556) of the students. Missing values on self-efficacy and burnout variables were present for more than two-thirds of the total sample of 2192 nursing students (69.6% and 72.9%, respectively). None of the predictors of missingness emerged for either variable in the model, suggesting the absence of systematic missingness in the data. Therefore, we are confident that the results have not been biased by attrition.

4.2 | Results of the mediation model

The results of the hypothesised mediation model are presented in Table 2. Model 2 (adjusted) had comparable AIC and BIC indexes with respect to Model 1, thus, since Model 2 was adjusted for gender, it was considered the best fitting and definitive model. The PM for the adjusted model shows that approximately 40% of the effect of ASE is mediated by burnout. Both direct (PNDE, TNDE)

TABLE 2 Estimates of total, indirect, and direct effects based on counterfactuals ($n = 556$)

	Model 1				Model 2			
		95%CI				95%CI		
	RR	Lower	Upper	*p*	RR	Lower	Upper	*p*
TNIE	0.949	0.919	0.919	**0.002**	0.946	0.913	0.981	**0.003**
PNDE	1.203	1.051	1.376	**0.007**	1.213	1.057	1.392	**0.006**
PNIE	0.942	0.897	0.989	**0.018**	0.937	0.891	0.986	**0.012**
TNDE	1.212	1.050	1.396	**0.007**	1.225	1.061	1.415	**0.006**
CDE	1.209	1.050	1.388	**0.007**	1.222	1.062	1.406	**0.005**
TE	1.142	0.999	1.305	0.051	1.149	1.003	1.317	**0.044**
PM	−0.411				−0.416			
AIC	762.231				763.388			
BIC	−2580.94				−2575.30			

Abbreviations: AIC, Akaike information criteria; BIC, Bayesian information criteria; CDE, controlled direct effect; CI, confidence intervals; LL, log-likelihood; *p*, *p*-value; PM, proportion mediated; PNDE, pure natural direct effect; PNIE, pure natural indirect effect; TNDE, total natural direct effect; TNIE, total natural indirect effect.

Reference values for academic self-efficacy were set at 4.243 and 3.043; reference values were obtained from ±1 standard deviations from the mean. Model 1 is unadjusted; model 2 is adjusted for gender. Significant *p* values are in bold. PM is calculated as [TNDE × (TNIE-1)]/(TNDE× TNIE-1).

and indirect effects (PNIE, TNIE) were significant. Specifically, the adjusted PNIE (the mediating effect of burnout estimated at low levels of self-efficacy) shows a 6.3% lower probability of achieving academic success for individuals with higher burnout levels compared with their counterpart (RR = 0.937, $p = .012$). The adjusted TNIE (the mediating effect of burnout estimated at high levels of self-efficacy) shows a 5.4% lower probability of achieving academic success for individuals with higher burnout levels compared with their counterpart (RR = .946, $p = .003$). The adjusted PNDE (the effect of self-efficacy on academic success at low levels of the mediator) shows a probability increase in the academic success of 1.213 times for students who have higher levels of self-efficacy, compared with those exhibiting lower levels (RR = 1.213, $p = .006$). The adjusted TNDE (the effect of self-efficacy on academic success at high levels of the mediator) also shows a similar probability increase (RR = 1.225, $p = .006$).

5 | DISCUSSION

The primary purpose of this study was to investigate the possible mediating role of burnout in the relationship between self-efficacy and academic success. In each unadjusted model, the findings reveal a significant direct effect of self-efficacy on academic success; in other words, higher levels of self-efficacy increase the likelihood of academic success. The results also highlight significant indirect effects of self-efficacy on academic success via burnout. The model adjusted for gender did not reveal substantial differences compared with the unadjusted model; this suggests that in our sample, males and females do not differ with respect to the relationships studied.

We only considered the third academic year of the nursing students because of the presence of heavy academic duties such as exams, preparation for qualification exams and dissertations; this is consistent with the literature that highlights increasing levels of burnout in nursing students with the progression of each academic year (Watson et al., 2008).

The attrition rate in our study was very high with substantial missing data. This may have occurred as a result of requesting information on personal aspects of the student and not the anonymity of the questionnaires. Moreover, in nursing programmes, high levels of drop out occur from the beginning to the last year of the course (Bulfone, Mazzotta, et al., 2021). We involved students with a self-report paper-and-pencil questionnaire during class-hours. Although participation was voluntary, we think that a possible strategy to reduce attrition in the future could be to recognize credits for the participation in studies carried out by the Universities.

In our study, we showed that the rate of academic success was very low; the students who finished their studies in the established time was slightly more than a half. Based on the available literature, the academic success rate ranges from approximately 60% (Lancia et al., 2018) to 90% (Seago et al., 2012). Recent data collected after 2017–2018 academic year in our university indicate a percentage of 30.6% in academic success (Bulfone, De Maria, et al., 2021). In the year when the present manuscript was produced, we documented an improvement in terms of success, but the rate was still above average (51.97%) and therefore amenable to interventions. Nursing student academic success is a phenomenon of great interest for its impact on various factors, including nursing shortage (Dante et al., 2015), academic funds, academic reputation and training costs (Beer & Lawson, 2017).

In our study's findings, higher levels of self-efficacy significantly increase the likelihood of academic success. This relationship is consistent with the literature since numerous studies have shown that students with higher self-efficacy levels are also more likely to

achieve academic success (Bandura, 1977, 1995; Bouih et al., 2021; Schneider & Preckel, 2017) than their counterparts. We hypothesize a few reasons for this phenomenon; first, it may be that our students perceived the new goals as a challenge rather than a threat (Bandura, 1993). Furthermore, the increasing levels of self-efficacy may enhance independence in nursing students, thus producing greater efforts to overcome difficulties and reach goals, and ultimately enhance the quality of care (Yu et al., 2021), job satisfaction and intention to stay in the profession (De Simone et al., 2018). The promotion of self-efficacy can also prevent the tendency to avoid past failed experiences (Bandura, 1993). This is important for nursing students to acquire as this may favour the development of specific competencies acquired by observing other nurses and by repeating clinical skills during their clinical placement (Lee et al., 2019).

We also showed a significant indirect effect of self-efficacy on academic success via burnout, and such a mediating effect amounts to approximately half of the total effect of self-efficacy on academic success. This means that lower levels of self-efficacy can enhance burnout, and this in turn can affect academic success in nursing students: a low level of self-efficacy can produce a high level of burnout and lower probability of success (Madigan & Curran, 2021). This relationship has not been shown by other authors and we considered this discovery as noteworthy because nursing students are at a high risk of burnout (Labrague et al., 2018; Watson et al., 2008) as a result of academic duties (Lopes & Nihei, 2020). The consequences of burnout are very dangerous for memory and problem-solving abilities, where these factors are unsurprisingly implicated in hampering academic success and nursing workforce (Madigan & Curran, 2021).

Another consideration should be made in relation to generation Z (burn between 1996 and 2012). These students generally work hard but they also exhibit low levels of self-confidence associated with high levels of insecurity and anxiety (Twenge, 2017). They also happen to procrastinate their academic works and expect input from their instructors (Seemiller & Grace, 2016). Briefly, the Z generation students are characterized by the necessity to have frequent feedback, be guided and supported by the academic staff (Edwards-Maddox et al., 2021).

Nursing teachers have greater motivation for enhancing academic success in nursing students. The model tested suggest introducing interventions to increase the level of self-efficacy and decrease at the same time the levels of burnout. Students' self-efficacy can be increased by mastery experiences, vicarious learning, social persuasion and psychological states (Bandura, 1977). Mastery experience is the ability to have confidence in solving problems, and vicarious learning is the ability to learn from the experience of others (Bandura, 1977). To improve mastery experiences and vicarious learning, nursing teachers should both work on the quality of clinical placement, and on training mentors with advanced clinical and teaching skills. Improving clinical learning means addressing and discussing with mentors the gap between theory and practice, collaborating in clinical decision making, and exercising in communication skills with patients and caregivers (Visiers-Jiménez et al., 2021). These interventions must be considered to improve academic success and increase nursing retention (Muñoz, 2021). Academic success is not only a parameter for evaluating the efficacy of the programme (Ministerial Decree no. 17/2010) but also a factor for preventing social exclusion (Freeman & All, 2017), promoting human development and enriching social and cultural capital (Lancia et al., 2018).

Future research should confirm this mediation model in nursing students of the first and second year of the programme and focus on the longitudinal trend of self-efficacy and burnout.

5.1 | Limitations and strengths

This study has some limitations. First, we had a convenience sample with the significant number of missing values in the burnout and self-efficacy variables. However, we also showed the absence of systematic missingness in the data. The second limitation is that, despite our longitudinal data, the model tested was cross-sectional; therefore, any casual inference cannot be deducted. Generalization is also limited to this sample for the peculiarity of the *curriculum study* that can be different from other universities. Another limitation is that the data about burnout and self-efficacy are essentially self-reported; as a result, we cannot exclude some bias due to social desirability tendency (Althubaiti, 2016).

Academic success was measured as the ability of the baccalaureate nursing students to complete their study on time (Bulfone, De Maria, et al., 2021; Lancia et al., 2018); in the Italian context, this is reached at 3 years and one semester with respect to the beginning of the study programme. This operationalization could hamper any comparison with other studies that adopted a different definition of academic success.

One strength of this study builds on the novelty of our study aims, in that, to our knowledge, the hypothesised model had never been tested before in nursing student populations. Another strength is the type of statistical analysis implemented, which allowed us to model a dichotomous outcome when testing for mediation effects, and the use of a more appropriate measure of association, to avoid estimation distortions.

6 | CONCLUSION

This study suggests that the mechanism by which self-efficacy influences academic performance in nursing students is more complex than a simple direct relationship. Universities should consider screening students for variables affecting academic success for decreasing academic costs and increasing ranking systems classification. We particularly emphasize the importance of also considering self-efficacy in nursing students, in light of our findings that it is a determinant construct for the development and promotion of competence. Nurses' professors should be engaged in strategies to promote self-efficacy even if this takes a long time in the academic programme. Interventions for promoting self-efficacy should be

structured during classes and internships, in tandem with the mentor and the clinical nurse. Finally, clinical nurses should be aware that the preparation of a newly graduated nurse who reflects high-quality standards might also mean paving the way for promoting positive patient outcomes.

CONFLICT OF INTEREST

No conflict of interest has been declared by the authors.

AUTHOR CONTRIBUTIONS

G.B., P.I., R.M., E.V. and R.A.: Made substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data; G.B., R.M. and P.I.: Involved in drafting the manuscript or revising it critically for important intellectual content; G.B., P.I., M.S., R.M., A.S., L.M., E.V. and R.A.: Given final approval of the version to be published. Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content; G.B., P.I., R.M., M.S., A.S., L.M., E.V. and R.A: Agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

PEER REVIEW

The peer review history for this article is available at https://publons.com/publon/10.1111/jan.15231.

ORCID

Giampiera Bulfone https://orcid.org/0000-0002-5299-3302
Paolo Iovino https://orcid.org/0000-0001-5952-881X
Rocco Mazzotta https://orcid.org/0000-0002-1874-5233
Loreana Macale https://orcid.org/0000-0003-4206-833X
Alessandro Sili https://orcid.org/0000-0003-4170-3469
Ercole Vellone https://orcid.org/0000-0003-4673-7473
Rosaria Alvaro https://orcid.org/0000-0002-4659-1569

TWITTER

Rocco Mazzotta @mazzottarocco

REFERENCES

Aghajari, Z., Loghmani, L., Ilkhani, M., Talebi, A., Ashktorab, T., Ahmadi, M., & Borhani, F. (2018). The relationship between quality of learning experiences and academic burnout among nursing students of Shahid Beheshti University of Medical Sciences in 2015. *Electronic Journal of General Medicine*, *15*(6), em90. https://doi.org/10.29333/ejgm/93470

Althubaiti, A. (2016). Information bias in health research: Definition, pitfalls, and adjustment methods. *Journal of Multidisciplinary Healthcare*, *9*, 211–217. https://doi.org/10.2147/JMDH.S104807

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, *84*(2), 191–215. https://doi.org/10.1037//0033-295x.84.2.191

Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist*, *28*(2), 117–148.

Bandura, A. (1995). *Self-efficacy in changing societies*. Cambridge University Press.

Beer, C., & Lawson, C. (2017). The problem of student attrition in higher education: An alternative perspective. *Journal of Further and Higher Education*, *41*(6), 773–784. https://doi.org/10.1080/0309877X.2016.1177171

Bouih, A., Nadif, B., & Benattabou, D. (2021). Assessing the effect of general self-efficacy on academic achievement using path analysis: A preliminary study. *Journal of English Language Teaching and Applied Linguistics*, *3*, 18–24. https://doi.org/10.32996/jeltal.2021.3.4.3

Bulfone, G., De Maria, M., Maurici, M., Macale, L., Sili, A., Vellone, E., & Alvaro, R. (2021). Academic failure and its predictors in baccalaureate nursing students: A longitudinal study. *Journal of Clinical Nursing*, *30*(13–14), 1953–1962. https://doi.org/10.1111/jocn.15748

Bulfone, G., Mazzotta, R., Cocco, M., Maurici, M., Anastasia, M., Macale, L., Sili, A., Vellone, E., & Alvaro, R. (2021). Variables predicting academic success of nursing students: A longitudinal study in a nursing Bachelor's degree program. *Annali di Igiene*. https://doi.org/10.7416/ai.2021.2488

Bulfone, G., Vellone, E., Maurici, M., Macale, L., & Alvaro, R. (2020). Academic self-efficacy in bachelor-level nursing students: Development and validation of a new instrument. *Journal of Advanced Nursing*, *76*(1), 398–408. https://doi.org/10.1111/jan.14226

Consiglio, C., Borgogni, L., Vecchione, M., & Maslach, C. (2014). Self-efficacy, perceptions of context, and burnout: A multilevel study on nurses. *La Medicina del Lavoro*, *105*(4), 255–268.

Dante, A., Fabris, S., Palese, A., & on behalf of RIASI group. (2015). Predictive power of individual factors and clinical learning experience on academic success: Findings from a longitudinal study. *Nurse Educator*, *40*(3), E1-E6. https://doi.org/10.1097/nne.0000000000000132

De Simone, S., Planta, A., & Cicotto, G. (2018). The role of job satisfaction, work engagement, self-efficacy and agentic capacities on nurses' turnover intention and patient satisfaction. *Applied Nursing Research*, *39*, 130–140. https://doi.org/10.1016/j.apnr.2017.11.004

Edwards-Maddox, S., Cartwright, A., Quintana, D., & Contreras, J. A. (2021). Applying Newman's theory of health expansion to bridge the gap between nursing faculty and generation Z. *Journal of Professional Nursing*, *37*(3), 541–543. https://doi.org/10.1016/j.profnurs.2021.02.002

Elias, S. M., & MacDonald, S. (2007). Using past performance, proxy efficacy, and academic self-efficacy to predict college performance. *Journal of Applied Social Psychology*, *37*(11), 2518–2531. https://doi.org/10.1111/j.1559-1816.2007.00268.x

Emsley, R. & Liu, H. (2013). PARAMED: Stata module to perform causal mediation analysis using parametric regression models. https://EconPapers.repec.org/RePEc:boc:bocode:s457581

Freeman, J. C., & All, A. (2017). Academic support programs utilized for nursing students at risk of academic failure: A review of the literature. *Nursing Education Perspectives*, *38*(2), 69–74. https://doi.org/10.1097/01.Nep.0000000000000089

Hultell, D., & Gustavsson, J. P. (2010). A psychometric evaluation of the scale of work engagement and burnout (SWEBO). *Work*, *37*(3), 261–274. https://doi.org/10.3233/wor-2010-1078

Labrague, L. J., McEnroe-Petitte, D. M., Al Amri, M., Fronda, D. C., & Obeidat, A. A. (2018). An integrative review on coping skills in nursing students: Implications for policymaking. *International Nursing Review*, *65*(2), 279–291. https://doi.org/10.1111/inr.12393

Lancia, L., Caponnetto, V., Dante, A., Mattei, A., La Cerra, C., Cifone, M. G., & Petrucci, C. (2018). Analysis of factors potentially associated with nursing students' academic outcomes: A thirteen-year retrospective multi-cohort study. *Nurse Education Today*, *70*, 115–120. https://doi.org/https://doi.org/10.1016/j.nedt.2018.08.020

Lee, B.-O., Liang, H.-F., Chu, T.-P., & Hung, C.-C. (2019). Effects of simulation-based learning on nursing student competences and clinical performance. *Nurse Education in Practice*, *41*, 102646. https://doi.org/10.1016/j.nepr.2019.102646

Lopes, A. R., & Nihei, O. K. (2020). Burnout among nursing students: Predictors and association with empathy and self-efficacy. *Revista Brasileira de Enfermagem*, *73*(1), e20180280. https://doi.org/10.1590/0034-7167-2018-0280

Madigan, D. J., & Curran, T. (2021). Does burnout affect academic achievement? A meta-analysis of over 100,000 students. *Educational Psychology Review*, *33*(2), 387–405. https://doi.org/10.1007/s10648-020-09533-1

Maslach, C. (1998). A multidimensional theory of burnout. *Theories of Organizational Stress*, *68*, 85.

Maslach, C., Jackson, S. E., & Leiter, M. P. (1996). *The maslach burnout inventory-test manual*. Consulting Psychologists Press.

Maslach, C., & Leiter, M. (1997). *The truth about burnout*. Jossey-Bass.

Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual Review of Psychology*, *52*(1), 397–422.

Muñoz, L. R. (2021). Graduate student self-efficacy: Implications of a concept analysis. *Journal of Professional Nursing*, *37*(1), 112–121. https://doi.org/10.1016/j.profnurs.2020.07.001

Muthén, B. O., Muthén, L. K., & Asparouhov, T. (2017). *Regression and mediation analysis using Mplus*. Muthén & Muthén.

Richardson, M., Abraham, C., & Bond, R. (2012). Psychological correlates of university students' academic performance: A systematic review and meta-analysis. *Psychological Bulletin*, *138*(2), 353–387. https://doi.org/10.1037/a0026838

Safarzaie, H., Nastiezaie, N., & Jenaabadi, H. (2017). The relationship of academic burnout and academic stress with academic self-efficacy among graduate students. *The New Educational Review*, *49*(3), 65–76. https://doi.org/10.15804/tner.2017.49.3.05

Schaufeli, W. B., & Taris, T. W. (2005). The conceptualization and measurement of burnout: Common ground and worlds apart. *Work & Stress*, *19*(3), 256–262.

Schneider, M., & Preckel, F. (2017). Variables associated with achievement in higher education: A systematic review of meta-analyses. *Psychological Bulletin*, *143*(6), 565–600. https://doi.org/10.1037/bul0000098

Seago, J. A., Keane, D., Chen, E., Spetz, J., & Grumbach, K. (2012). Predictors of students' success in community college nursing programs. *The Journal of Nursing Education*, *51*(9), 489–495. https://doi.org/https://doi.org/10.3928/01484834-20120730-03

Seemiller, C., & Grace, M. (2016). *Generation Z goes to college*. Jossey-Bass.

Shoji, K., Cieslak, R., Smoktunowicz, E., Rogala, A., Benight, C. C., & Luszczynska, A. (2016). Associations between job burnout and self-efficacy: A meta-analysis. *Anxiety, Stress, and Coping*, *29*(4), 367–386. https://doi.org/10.1080/10615806.2015.1058369

Twenge, J. (2017). IGen: Why Today's super-connected kids are growing up less rebellious, more tolerant. In *Less Happy—Completely Unprepared for Adulthood*. Atria Books.

VanderWeele, T. (2015). *Explanation in causal inference: Methods for mediation and interaction*. Oxford University Press.

Viera, A. J. (2008). Odds ratios and risk ratios: What's the difference and why does it matter? *Southern Medical Journal*, *101*(7), 730–734. https://doi.org/10.1097/SMJ.0b013e31817a7ee4

Visiers-Jiménez, L., Suikkala, A., Salminen, L., Leino-Kilpi, H., Löyttyniemi, E., Henriques, M. A., Jiménez-Herrera, M., Nemcová, J., Pedrotti, D., Rua, M., Tommasini, C., Zeleníková, R., & Kajander-Unkuri, S. (2021). Clinical learning environment and graduating nursing students' competence: A multi-country cross-sectional study. *Nursing & Health Sciences*, *23*(2), 398–410. https://doi.org/10.1111/nhs.12819

Wambuguh, O., Eckfield, M., & Van Hofwegen, L. (2016). Examining the importance of admissions criteria in predicting nursing program success. *International Journal of Nursing Education Scholarship*, *13*(1), 87–96. https://doi.org/10.1515/ijnes-2015-0088

Watson, R., Deary, I., Thompson, D., & Li, G. (2008). A study of stress and burnout in nursing students in Hong Kong: A questionnaire survey. *International Journal of Nursing Studies*, *45*(10), 1534–1542. https://doi.org/10.1016/j.ijnurstu.2007.11.003

Yu, M., Tong, H., Li, S., Wu, X. V., Hong, J., & Wang, W. (2021). Clinical competence and its association with self-efficacy and clinical learning environments among Chinese undergraduate nursing students. *Nurse Education in Practice*, *53*, 103055. https://doi.org/10.1016/j.nepr.2021.103055

How to cite this article: Bulfone, G., Iovino, P., Mazzotta, R., Sebastian, M., Macale, L., Sili, A., Vellone, E. & Alvaro, R. (2022). Self-efficacy, burnout and academic success in nursing students: A counterfactual mediation analysis. *Journal of Advanced Nursing*, 78, 3217–3224. https://doi.org/10.1111/jan.15231