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REVIEW ARTICLE

Student Burnout and Educational Dropout: A Systematic Review and Meta-Analysis of Dropout Behavior and Intentions

Daniel J. Madigan[1] · **Hanna L. Glandorf**[1,2,3]

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Abstract
Some students drop out of education. Recent work suggests that mental health issues – such as burnout – may be prominent reasons why they do so. To explore this idea further, the aim of the present study was to provide the first systematic review and meta-analysis of the relationship between student burnout and educational dropout. In doing so, we focused on both direct (dropout behavior) and indirect measures (dropout intentions) of dropout. Following pre-registration, we conducted a search of PsycINFO, PsycArticles, MEDLINE, Education Abstracts, Educational Administration Abstracts, and ProQuest Dissertations and Theses up to January 2026. We followed PRISMA guidelines and provided a narrative synthesis and multilevel meta-analysis. Our search found 31 studies (with 34 samples; $N = 39{,}454$) with most studies focusing on dropout intentions. In the three studies that had examined direct measures, burnout was shown to be a significant predictor of dropout behavior (including in one study examining enrollment status). In the remaining studies, burnout was consistently associated with dropout intentions both cross-sectionally, and, in several studies, over time. This was supported by the findings of the multilevel meta-analysis where burnout was positively associated with dropout intentions ($r^{+} = .46$, 95% $CI = .44$ to $.55$). These findings were moderated by level of study (higher for postgraduate students) and burnout dimension (highest for cynicism). It appears that student burnout may be linked to educational dropout, and that this may be especially the case for dropout intentions. More studies on dropout behavior are needed before concrete conclusions can be made and further work is necessary to integrate and test theory, including examining possible mechanisms underpinning these relationships.

Keywords Attrition · Intention to quit · Exhaustion · College · University

Extended author information available on the last page of the article

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Introduction

Despite their best efforts, some students end up dropping out from education. Unfortunately, too, it appears to be a global problem that occurs at all stages of post-compulsory education. For example, in the USA, as many as 20–55% of students are dropping out from university (National Center for Education Statistics, 2024). Compounding these issues, it would appear that dropout rates in upper secondary education are on the rise (UNESCO, 2024). Leaving education prematurely has serious and possibly life-long implications for students. This includes restricting access to higher paid jobs, exacerbating financial pressures relating to student loans, and even costs for student's wellbeing (e.g., Giani et al., 2020; Neugebauer et al., 2025). Researchers have therefore dedicated much time and effort to determining factors that may predispose students to dropout. In the present study, we are interested in a factor that is also increasing among students – burnout. Although student burnout has been examined extensively, and research attests to its relevance for the experiences of students (e.g., Madigan & Curran, 2021), our understanding of its implications for educational dropout are currently limited. Consequently, the aim of the present review is to provide the first systematic review and meta-analysis of the relationship between student burnout and educational dropout.

Educational Dropout

Dropout is common in the workplace (e.g., Goldhaber & Theobald, 2022). For students aspiring to develop the skills and qualifications required to get the job they want, dropout from educational courses and programmes appears to be even more pervasive (e.g., Krane et al., 2016). So as to understand educational dropout and therefore reduce its prevalence, much empirical research has been conducted. This work has focused on grouping students into those who remain in education, those who change course or institution, or those who leave education entirely (e.g., Kehm et al., 2019). The latter group is perhaps the most important in relation to possible negative consequences. In terms of quantifying members of this group, then, at its simplest, research seeks to measure those who leave using actual data (school/university records) or via self-reported status.

Measuring actual dropout behavior can be problematic. This is because it is difficult to disentangle those who leave out of choice versus having to do so because of course failure and it can require often prohibitively costly and challenging research procedures (e.g., Schmitt et al., 2021). For these reasons, researchers have sought to develop indirect or proxy measures of dropout. The most commonly examined of these is current students' dropout intentions (conscious plans to leave school or university; Muñoz-Inostroza et al., 2024). Doing so has theoretical and empirical support. Within the Theory of Planned Behavior, intentions are considered the most proximal predictor of behavior (Ajzen, 1991; see also Armitage & Conner, 2001). This is supported by empirical evidence that shows that intentions are positively associated with actual dropout behaviors (e.g., Findeisen et al., 2024). Thus, measuring intentions is useful as it allows researchers insights into the predictors and con-

sequences of dropout without having to deal with the complexities of finding those who have actually left.

Unsurprisingly much research has sought to identify the predictors of educational dropout. Many factors have been implicated in this process. This has included broader demographic (e.g., age) and socioeconomic factors (e.g., financial pressures; Apumayta et al., 2024). But it has also included psychosocial factors such as the educational environment, teacher personality, and student motivation (e.g., Lorenzo-Quiles et al., 2023). Perhaps most frequently cited in this regard, however, is student mental health (e.g., Zając et al., 2024). For these reasons, the focus of the present study is on a factor tied to both an individual's motivation and mental (and physical) health status – burnout.

Student Burnout

Burnout has been examined since the 1980s. This early work began in the human services professions when researchers identified a set of novel interrelated psychosocial complaints among workers who were chronically exposed to emotionally demanding situations (Freudenberger, 1986; Maslach & Jackson, 1981). Off the back of this work burnout was defined as a multidimensional syndrome comprising three core symptoms: emotional exhaustion (feelings of being emotionally overextended and exhausted by one's work), cynicism (a cynical and impersonal response toward recipients of one's care), and reduced efficacy (no longer feeling competent and successful at one's work; Maslach et al., 1997). In the several decades since the introduction of this definition much progress has been made in understanding burnout and its consequences (Lubbadeh, 2020). Perhaps most notable in this regard was the adoption of this conception of burnout by the World Health Organization (WHO, 2025). Empirical research has also distinguished burnout from related constructs such as depression, underscoring its unique conceptual and practical significance (Meier & Kim, 2022).

A major defining feature of burnout is its link to work-related contexts. In this regard, historically, burnout was developed to capture the experiences of employees in demanding occupations (Maslach & Jackson, 1981). However, over time, researchers have extended the concept to other high-demand roles that share structural similarities with work such as competitive sport and education (e.g., Brunsting et al., 2014; Gustafsson et al., 2017). In these contexts, individuals are required to invest sustained effort, meet external expectations, and cope with performance pressures over extended periods of time. As such, burnout has increasingly been examined beyond traditional work settings.

Within education, teachers appear to be particularly vulnerable to burnout due to high workload, emotional demands, and role complexity (e.g., Madigan et al., 2023, 2024). Importantly, students themselves may also be at risk, as they regularly encounter substantial academic demands, including heavy workloads, performance evaluations, time pressures, and expectations for sustained engagement with their studies. However, the educational context differs in important ways from traditional work settings. Students' primary role centers on learning rather than service provision or productivity, and the structure of their activities, motivations, and evaluation

systems can differ markedly from those found in employment contexts (Walburg, 2014). Consequently, researchers have argued that burnout should be contextualized to reflect the specific demands and characteristics of studying, as such alignment improves both conceptual clarity and measurement validity and allows for a more accurate understanding of students' experiences and academic outcomes.

Early efforts to adapt burnout to the educational context were led by researchers who revised existing burnout frameworks and measures. For example, Schaufeli and colleagues (2002) contextualised Maslach's original definition to reflect feelings of exhaustion because of study demands, having a cynical and detached attitude toward one's study, and feelings of incompetence as a student. More recently, further conceptual developments were proposed within educational psychology. In particular, Salmela-Aro and colleagues (2009) introduced a model of school burnout that emphasizes students' experiences of exhaustion related to schoolwork, cynical attitudes toward school, and feelings of inadequacy as a student. Together, these developments have helped establish student burnout as a distinct construct within the educational literature. Aligning with these perspectives, then, in the present study we considered student burnout to reflect a multidimensional syndrome of exhaustion from studying, cynicism directed towards one's study, and reduced efficacy in relation to academic work (Salmela-Aro et al., 2009; Schaufeli et al., 2002).

Much progress has been made in understanding student burnout. This has included estimating its prevalence, which has highlighted it as a global problem (Kaggwa et al., 2021; Rosales-Ricardo et al., 2021). It has also included its predictors with research illustrating a role for stress, workload, perfectionism, and social support (e.g., Hill & Curran, 2016; Hyytinen et al., 2022; Kim et al., 2018). Research has also examined its consequences. In this regard, studies have consistently shown that burnout imposes substantial costs for students. For example, student burnout is associated with loneliness, substance use, depressive symptoms, and greater suicidal ideation over the course of an academic programme (Dobos et al., 2024; Andrade et al., 2021; Dyrbye et al., 2008). These detrimental effects extend to academic functioning, with burnout linked to lower engagement, undermined motivation, and reduced academic achievement (Salmela-Aro & Read, 2017; Seibert et al., 2016; Madigan & Curran, 2021).

Student Burnout and Educational Dropout

There is reason to believe that student burnout will increase dropout risk. In this regard, we first note that much of the existing student burnout research could be considered descriptive and, as such, there have been few attempts to develop theoretical models of student burnout that could be used to understand this relationship. One notable, and recent, exception, however, is Study Demands-Resources Theory (Bakker & Mostert, 2024). This theory posits that student burnout is primarily the consequence of an imbalance between study demands and resources. In particular, high study demands, such as workload, time pressures, and cognitive complexity, require sustained physical, emotional, and mental effort, which over time depletes students' energy and leads to exhaustion, cynicism, and reduced efficacy (i.e., burnout). On the other hand, high study resources, such as social support, feedback, and autonomy,

can buffer the negative effect of study demands on burnout development. The model also highlights that burnout itself contributes to self-undermining behaviors, such as procrastination and poor communication, which in turn increase demands and further exacerbate burnout (known as a loss spiral). Therefore, burnout is the product of excessive demands and low resources and can be self-perpetuating. According to this model, burnout acts as a mediator between study demands and negative academic outcomes, one of which is educational dropout.

How, then, may burnout lead to dropout? In addition to highlighting the importance of how burnout places further demands on students, and can increase self-undermining behaviors, we also draw on stress and motivational theory and burnout theory outside the context of education to help us answer this question (e.g., Madigan & Kim, 2021). In doing so, we think it is important to understand how the symptoms of burnout may underpin differential behavioral and motivational processes. First, in line with stress theory (e.g., Lazarus & Folkman, 1984), it is likely that both exhaustion (e.g., having no energy) and cynicism (e.g., lack of caring) will reinforce avoidant coping strategies (e.g., Shin et al., 2014). Most notably in relation to dropout would be the withdrawal of effort dedicated to studying and attending class, and, over time, and with increasing severity, the desire to escape education entirely. Exhaustion will also result in feelings of lethargy and students may be unable to expend energy on in-class tasks and activities (e.g., Schaufeli & Buunk, 2003). In addition, cynicism may have relevant interpersonal consequences such as increasing conflict with peers and teachers. In these circumstances, withdrawal is seen as a viable method to reduce or avoid such conflict. Reduced efficacy, however, may reflect perceived and actual reductions in academic performance and ability. As such, in line with Self-Efficacy (Bandura, 1997) and Expectancy-Value theories (Wigfiield & Eccles, 2000), reduced efficacy will likely negatively affect the quantity and quality of students' motivation, and may also underpin performance difficulties. Together, then, burnout symptoms will likely have implications for whether a student will continue to study or withdraw and dropout.

It is also possible that burnout may be differentially related to dropout intentions versus dropout behavior. Because intentions reflect a psychological appraisal of whether continuing studying is desirable or feasible, burnout symptoms may influence these internal evaluations relatively quickly. In contrast, because actual dropout behavior is influenced by a much larger set of socioeconomic, social, and personal factors (including intentions), it is possible that burnout may show weaker or less consistent relationships with actual dropout behavior than with intentions.

A growing body of work lends support to these theoretical assertations. This includes summaries of research outside of education. For example, although less work has been undertaken in relation to dropout behavior, burnout in physicians, workers, and teachers has been found to be strongly associated with dropout intentions (Lee & Ashforth, 1996; Madigan & Kim, 2021; Williams et al., 2020). This work also includes many individual studies in students, in relation to dropout behavior as well as dropout intentions (e.g., Bask & Salmela-Aro, 2013; Maymon et al., 2019). However, no study has yet summarized the existing literature in this area. This is important because it is unclear what is already known about these relationships and on what quality of evidence it is based. Providing a systematic review of this lit-

erature would, therefore, not only summarize our knowledge of student burnout and dropout but also allow for recommendations to improve future research. Examining both dropout behavior and intentions would also be important for accurately interpreting the literature and drawing conclusions about burnout for student retention. Finally, meta-analyses would yield quantitative summaries of effects, providing more accurate estimates of the strength of these associations.

In addition to quantitatively summarizing effect sizes, meta-analyses also permit an exploration of factors that may moderate the relationship between student burnout and dropout. There are likely some conditions or characteristics under which effect sizes may vary. For example, sample characteristics may be important such as the level of education. Here, it is possible that motivation becomes more vulnerable as students move through education and the experiences become increasingly stressful, therefore we may expect postgraduate students, for example, to experience more frequent burnout symptoms than their undergraduate counterparts (Kaggwa et al., 2021). Effects may also differ based on how burnout is measured. The MBI is the most frequently used measure to quantify burnout and differs in content to other measures, and based on different versions, differs in relation to the volume of contextualization to education (e.g., Salmela-Aro et al., 2009). It is also possible that a particular burnout symptom is more important than others. Historically it has been exhaustion that is most relevant for outcomes in the workplace (Madigan & Kim, 2021). Finally, there may be other factors that are relevant (e.g., age, country; Global Education Monitoring Report Team and UNESCO Institute for Statistics, 2022). Conducting such moderator analyses as part of the meta-analysis will allow us to examine such possibilities and may provide direction for more effective interventions.

The Present Study

Against this background, the overall aim of the present study was to provide the first systematic review and meta-analysis of research examining the relationship between student burnout and educational dropout. To provide a comprehensive understanding of this relationship, and to examine whether relationships differ across outcomes, we focus on both direct (dropout behavior) and indirect measures (dropout intentions) of dropout. We first summarize existing research via a systematic review, and then provide quantitative estimates via meta-analysis, before exploring possible moderators. We expected that student burnout would be positively associated with dropout, and that associations may be stronger for intentions than for behavior.

Method

The present study was first preregistered using the PRISMA-P template on PsychArchives (Madigan & Glandorf, 2026). In conducting the study, we followed the most recent PRISMA guidelines (Page et al., 2021) and the only deviation from the preregistered protocol involved exploratory moderation analyses examining the measurement of dropout intentions (in terms of studies that used multiple-item versus single-item scales and the total number of items).

Literature Search

The search was conducted using the following databases: PsycINFO, PsycArticles, MEDLINE, Education Abstracts, Educational Administration Abstracts, and ProQuest Dissertations and Theses. The following terms were searched using a combination of keywords (relevant to each database): "student" or "academic" AND "burnout" or "exhaustion" or "cynicism" or "reduced efficacy" AND "dropout" or "attrition" or "intention to quit" or "quitting intention". In addition, backward (reference lists of eligible studies were searched manually) and forward searches were performed (articles that cited eligible studies were examined manually [using Google scholar]).

The search was conducted on 12 January 2026 and found 677 studies. Duplicates were removed and then abstracts were screened for relevance (614 studies). The remaining studies were then assessed in relation to the inclusion criteria below. Each stage was reviewed by an individual with experience of conducting systematic reviews who was independent of the research team (inter-rater reliability, calculated using Kappa (McHugh, 2012), was .90).

Inclusion Criteria

Studies were included in the present review if they: (a) measured burnout using established self-report scales that yielded quantitative values, (b) included a sample of students, (c) measured dropout, intentions to quit, or similar construct, (d) were published in English, and (e) were a published journal article or thesis/dissertation. Overall, 31 studies (with 34 samples) met the inclusion criteria. A detailed overview of the review process can be found in Fig. 1.

Data Extraction

The following data were then extracted from these studies: (a) publication information (authors/year), (b) sample size, (c) gender (% of female), (d) age (including mean and range), (e) level of study, (f) country, (g) design, (h) analyses, (i) instrument used to measure burnout, (j) instrument use to measure dropout, (k) the main findings, and (l) effect size for the relationship between burnout and dropout. The accuracy and consistency of data was again checked by an individual with experience of conducting systematic reviews who was independent of the research team (Kappa = .93). Extracted information can be found in Tables 1, 2, and 3.

Risk of Bias

Risk of bias assessments were then conducted using an established methodological quality instrument for quantitative studies reporting correlations and associations (National Institute for Health and Care Excellence Quality Appraisal Checklist [NICE, 2012]). Studies were assessed against 18 criteria from this instrument (e.g., characteristics of study participants, reliability of outcome measures, appropriate power; see Table 3 for full details). For each criterion, studies were rated as having

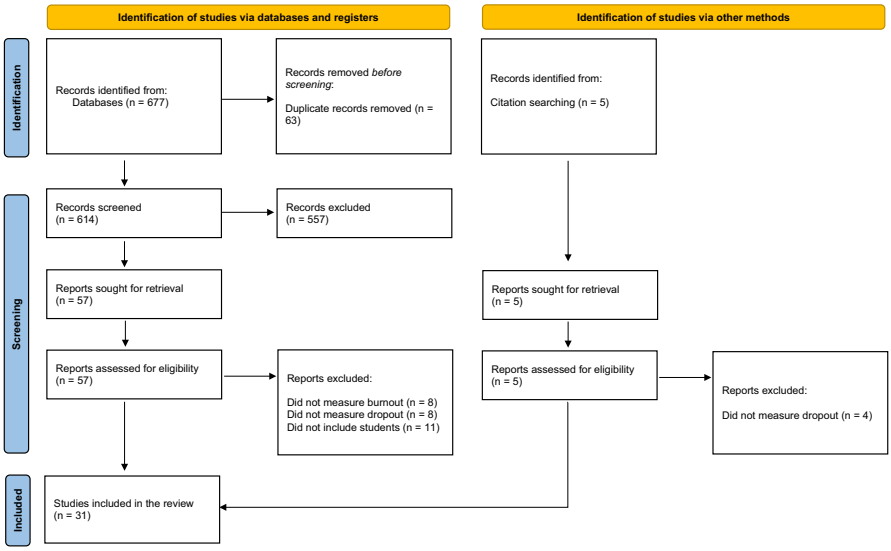

Fig. 1 Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Diagram Illustrating Study Selection Process

minimized risk of bias, may not have addressed all sources of bias, and significant sources of bias may persist (in addition to not reporting or not being applicable).

Meta-Analytical Procedures

Meta-analyses were conducted with R and R Studio (Posit Team, 2025). Dropout intentions was the only outcome for which enough studies existed that could be meaningfully pooled (see below). In doing so, Fisher's *z* effect sizes were converted to Pearson's *r*.

Modelling Approach

Following current guidelines for meta-analyses, multilevel modelling was used to meta-analyse associations between burnout and dropout intentions (Gucciardi et al., 2021). Multilevel models partition the variance in the data across three levels, which allows to account for dependency among effect sizes in the case when a single study provides more than one effect size. In these models, the first level represents sampling variance, the second level represents within-study variance, and the third level represents between-study variance.

The analyses followed Gucciardi and colleagues' (2021) recommendations for multilevel meta-analyses. First, we used likelihood ratio tests to determine whether the partitioning of variance across the levels was meaningful. These tests compare the full model where variances are freely estimated to separate models in which the within-study and between-study variance are fixed to zero. Statistical significance of the models then indicates that the partitioning was meaningful. We also examined

Table 1 Studies Examining Student Burnout and Dropout Behavior

Study	*N*	%female	Age	Level	Country	Design	Analyses	Burnout measure	Criterion measure	Main Findings
Bask and Salmela-Aro (2013)	878	NR	Range = 16–21	Secondary, UG	Finland	Longitudinal	Reg., LGC	SBI	Ever dropped out of an educational programme (yes, no)	Based on logistic regression analysis comparing those with high burnout levels to low levels, cynicism (*OR* = 3.89) and inadequacy (*OR* = 2.77) significantly predicted higher dropout rates. These findings were supported by results of multigroup LGC analyses
Bumbacco and Scharfe (2023)	261	82.00%	19.39 (*SD* = 2.96)	UG	Canada	Prospective	SEM	SBI	Enrollment status (next academic year)	In a structural model, a latent burnout variable was a significant negative predictor (β = -.46) of whether students continued in the next year of study
Nadon et al. (2024)	513	67.60%	NR	Secondary, UG	Finland	Longitudinal	GMA	SBI	Dropped out any time after transitioning to general upper secondary school (yes, no)	A profile consisting of high and decreasing levels of burnout was most strongly associated with dropout across eight years

Note. NR = Not reported. Reg. = Regression. SEM = Structural equation modeling. LGC = Latent growth curve modelling. GMA = Growth mixture analysis. SBI = School Burnout Inventory (Salmela-Aro et al., 2009). UG = Undergraduate

Table 2 Studies Examining Student Burnout and Dropout Intentions

Study	*N*	%female	Age	Level	Country	Design	Analyses	Burnout measure	Criterion measure	Main Findings
Bélanger and Ratelle (2021)	482	67.00%	26.50 (*SD* = 7.60)	UG, PG	Canada	C/S	Cors	MBI-SS	Dropout intentions (two-items; e.g., "I intend to drop out of university"; Vallerand et al., 1995)	Total burnout and all symptoms were positively and significantly associated with dropout intentions
Boone et al. (2025) Sample 1	510	73.38%	19.63 (*SD* = 2.36)	Medical	Belgium	Longitudinal cohort (three years)	SEM	MBI-SS	Dropout intentions (two items; Van Veldhoven et al., 1994)	Exhaustion and cynicism were positively and significantly correlated with dropout intentions. In a structural model, cynicism was also a direct predictor of dropout intentions
Boone et al. (2025) Sample 2	422	72.97%	22.88 (*SD* = 2.34)	Medical	Belgium	Longitudinal cohort (three years)	SEM	MBI-SS	Dropout intentions (two items; Van Veldhoven et al., 1994)	Exhaustion and cynicism were positively and significantly correlated with dropout intentions. In a structural model, cynicism was also a direct predictor of dropout intentions
Cage and McManemy (2022)	385	82.86%	NR	UG, PG	UK	C/S	Reg	CBI	Dropout intentions (one item; "Have you ever considered dropping out of university?")	Analyses were grouped based on autism diagnosis ($n = 62$ vs. $n = 264$). In logistic regression analyses, in the non-autistic group, total burnout was a significant positive predictor of dropout intentions ($OR = 1.03$)

Table 2 (continued)

Study	*N*	%female	Age	Level	Country	Design	Analyses	Burnout measure	Criterion measure	Main Findings
Calcatin et al. (2022)	532	71.00%	19.48 (*SD* = 2.75)	Medical	Portugal	C/S	SEM	MBI-SS	Dropout intentions (one item; Have you ever thought about dropping out of medical school?)	In a structural model, a latent burnout variable was a significant positive predictor of dropout intentions (β = .43)
Cortes et al. (2014)	782	64.30%	NR	UG	South Africa	C/S	Reg	MBI-SS	Dropout intentions (one item; "How often do you think about leaving the university before you finish your degree?")	In logistic regression analyses, cynicism was a significant positive predictor of dropout intentions (*OR* = 1.22)
Dyrbye et al. (2010) Sample 1	2222	48.20%	NR	Medical	USA	C/S	Reg	MBI	Dropout intentions (one item; "Had any thoughts of dropping out of medical school in the past 12 months")	In logistic regression, exhaustion (*OR* = 1.12), cynicism (*OR* = 1.10), and inefficacy (*OR* = 1.07) were all significant positive predictors of dropout intentions
Dyrbye et al. (2010) Sample 2	858	NR	NR	Medical	USA	Prospective	Reg	MBI	Dropout intentions (one item; "Had any thoughts of dropping out of medical school in the past 12 months")	In logistic regression, exhaustion (*OR* = 1.07), cynicism (*OR* = 1.07), and inefficacy (*OR* = 1.07) were all significant positive predictors of dropout intentions 12 months later

Table 2 (continued)

Study	*N*	%female	Age	Level	Country	Design	Analyses	Burnout measure	Criterion measure	Main Findings
Emerson et al. (2023)	1119	44.77%	NR	UG	USA	C/S	Cors	MBI-GS	Dropout intentions (three items; "how often students thought about dropping out of the university"; Donnelly & Ivancevich, 1975)	All symptoms were positively and significantly correlated with dropout intentions. The same pattern of results was found in a structural equation model
Fynn (2022)	5400	73.40%	30.00 (*SD* = 8.69)	UG	South Africa	C/S	Cors	OLBI-S	Dropout intentions (one item; "How likely are you to discontinue your studies in the coming 12 months?")	Total burnout was positively and significantly correlated with dropout intentions
Gaudreau and Benoît (2025)	376	42.80%	25.76 (*SD* = 5.28)	PG	25 countries	C/S	Cors	SBI	Dropout intentions (three items; "I considered dropping out of graduate school"; Schellenberg & Gaudreau, 2020)	Total burnout was positively and significantly correlated with dropout intentions
Gonzalez et al. (2025)	1402	54.40%	22.87 (*SD* = 3.64)	UG	Portugal	C/S	Cors	Academic exhaustion	Dropout intentions (three items; "I am thinking of leaving higher education"; Casanova et al., 2021)	Exhaustion was positively and significantly correlated with dropout intentions
Koeske and Koeske (1991)	146	82.00%	NR	PG	USA	C/S	SEM	MBI	Dropout intentions (one item; "I feel like dropping out of the MSW program.")	Exhaustion was positively and significantly correlated with dropout intentions. This was also the case in a structural model (β = .39)

Table 2 (continued)

Study	*N*	%female	Age	Level	Country	Design	Analyses	Burnout measure	Criterion measure	Main Findings
Marôco et al. (2020)	4061	60.00%	23.20 (*SD*=5.60)	UG	Nine countries	C/S	SEM	MBI-SS	Dropout intentions (one item; "Have you thought of dropping out of college")	In a structural model, a latent burnout variable was a significant and positive predictor of dropout intentions (β=.52)
Maymon et al. (2019)	126	85.00%	18.69 (*SD*=2.19)	UG	Canada, USA	C/S	Cors	MBI	Dropout intentions (six items; Hackett, Lapierre, and Hausdorf, 2001)	Exhaustion was positively and significantly correlated with dropout intentions
Medisauskaite et al. (2025)	407	74.90%	21.49 (*SD*=3.24)	Medical	UK	Longitudinal (3 months)	GEE	MBI-SS	Dropout intentions (one item; "Have you considered dropping out of medical school in the past month?")	Exhaustion was positively and significantly related to dropout intentions (*B*=0.94)
Moneta (2011)	226	46.00%	23.70 (*SD*=5.80)	UG	UK	C/S	Cors	MBI-SS	Dropout intentions (three items; e.g., "I think in the near future I will leave my course of study"; Weisberg, 1994)	All symptoms were positively and significantly correlated with dropout intentions
Mostert and Pienaar (2020)	452	58.63%	20.08 (*SD*=2.70)	UG	South Africa	C/S	Cors	MBI-SS	Dropout intentions (3 items; "I want to quit my studies"; Sjöberg and Sverke, 2000)	All symptoms were positively and significantly correlated with dropout intentions. The same pattern of results was found in regression analyses
Nicita et al. (2025)	1497	69.70%	23.80 (*SD*=2.99)	UG, PG	Italy	C/S	Cors, SEM	MBI-SS	Dropout intentions (4 items; "intend to drop out of university"; Hardre & Reeve, 2003)	All symptoms were positively and significantly correlated with dropout intentions

Table 2 (continued)

Study	*N*	%female	Age	Level	Country	Design	Analyses	Burnout measure	Criterion measure	Main Findings
Parvi-ainen et al. (2020)	2889	53.50%	16.72 (*SD* = 0.41)	Secondary	Finland	C/S	Cors	SBI	Dropout intentions (2 items; e.g., "Have you considered quitting your current school or field of study"; Vasalampi et al., 2018)	Exhaustion and cynicism were positively and significantly correlated with dropout intentions
Peng et al. (2022)	1410	73.50%	NR	PG	China	C/S	Reg	MBI	Dropout intentions (one item; "Had any thoughts of dropping out of medical school in the past 12 month"; Dyrbye et al., 2010)	In logistic regression, total burnout was found to positively and significantly predict dropout intentions (*OR* = 2.04)
Peng et al. (2023)	3536	69.00%	NR	Medical	China	C/S	Net	LBS	Dropout intentions (one item; "I have considered dropping out/changing to a non-medical major")	In network analysis, cynicism items were most positively and strongly associated with dropout intentions
Phekni (2023)	112	45.53%	NR	UG	USA	C/S	Reg	BAT	Dropout intentions (5 items; Dresel & Grassinger, 2013)	In multiple regression analysis, emotional impairment was a positively and significant predictor of dropout intentions (β = .32)
Schriek et al. (2024)	1967	68.60%	23.45 (*SD* = 3.89)	UG	Germany	Longitudinal (4 waves; 3 years)	Cors	MBI	Dropout intentions (3 items; Blüthmann et al., 2011)	Exhaustion was positively and significantly correlated with dropout intentions at Time 1. No further analyses were reported

Table 2 (continued)

Study	*N*	%female	Age	Level	Country	Design	Analyses	Burnout measure	Criterion measure	Main Findings
Sinval et al. (2024)	351	74.92%	20.20 (*SD* = 3.99)	Medical	Portugal	C/S	SEM	BAT	Dropout intentions (4 items; e.g., "I am thinking in the possibility of dropping out of higher education"; Casanova et al., 2021)	In a structural equation model, a latent burnout variable was positively and significantly associated with dropout intentions (β = .37)
Turhan et al. (2022) Sample 1	597	66.16%	22.74 (*SD* = 2.88)	UG, PG	Germany	C/S	Cors	MBI-SS	Dropout intentions (5 items; e.g., I often think about dropping out from university permanently"; Dresel & Grassinger, 2013)	All symptoms were positively and significantly correlated with dropout intentions. This pattern of relationships was also supported by profile analysis
Turhan et al. (2022) Sample 2	857	80.16%	23.71 (*SD* = 4.11)	UG, PG	Germany	C/S	Cors	MBI-SS	Dropout intentions (5 items; e.g., I often think about dropping out from university permanently"; Dresel & Grassinger, 2013)	All symptoms were positively and significantly correlated with dropout intentions. This pattern of relationships was also supported by profile analysis
Turhan et al. (2023)	1435	59.65%	20.81 (*SD* = 2.71)	UG	Germany	Longitudinal (3-waves; 5 months)	LGC	MBI-SS	Dropout intentions (3 items; e.g., "At the moment I'm considering quitting my studies"; Bäulke et al., 2022)	In latent growth curve analysis, baseline levels and increases in all burnout symptoms over time predicted dropout intentions 5 months later
van Beek et al. (2013)	565	68.10%	21.00 (*SD* = 2.20)	UG	Netherlands	C/S	Cors	UBS-SV	Dropout intentions (3 items; e.g., "'I sometimes think about quitting my studies"; Van Veldhoven & Meijman, 1994)	Exhaustion was positively and significantly correlated with dropout intentions. Findings from a path model also supported this result

Table 2 (continued)

Study	*N*	%female	Age	Level	Country	Design	Analyses	Burnout measure	Criterion measure	Main Findings
Williams et al. (2018)	2451	79.20%	23.65 (*SD* = 7.54)	UG, PG	Australia	C/S	Cors	MBI-SS	Dropout intentions (10 items; e.g., ""It is unlikely that I will withdraw from my studies before graduating [reversed]")	Total burnout (comprising exhaustion and cynicism) was positively and significantly correlated with dropout intentions. Findings from a path model also supported this result
Xiao (2024)	227	69.16%	29.00 (*SD* = 8.66)	PG	USA	C/S	Cors	CBI	Dropout intentions (one item; "I often think about quitting graduate school")	Total burnout was positively and significantly correlated with dropout intentions

Note. NR = Not reported. C/S = Cross-sectional. Reg. = Regression. Cors = Correlations. SEM = Structural equation modeling. LGC = Latent growth curve modelling. Net. = Network analysis. GEE = Generalized estimating equations. GMA = Growth mixture analysis. MBI = Maslach Burnout Inventory (Maslach et al., 1986). MBI-SS = MBI-student survey (Schaufeli et al., 2002). MBI-GS = MBI-General survey (Maslach et al., 2016). SBI = School Burnout Inventory (Salmela-Aro et al., 2009). CBI = Copenhagen Burnout Inventory (Kristensen et al., 2005). BAT = Burnout Assessment Tool (Schaufeli et al., 2020). LBS = Learning Burnout Scale (Yang et al., 2022). UTB-SV = Utrecht Burnout Scale Student Version (Schaufeli & van Dierendonck, 2000). OLBI-S = Oldenburg Burnout Inventory Student Version (Reis et al., 2015). UG = Undergraduate. PG = Postgraduate. For clarity, burnout dimensions are referred to as exhaustion, cynicism, and inefficacy

Table 3 Effect sizes included in the multilevel meta-analysis

Study	*N*	Exhaustion	Cynicism	Inefficacy	Total
Bélanger and Ratelle (2021)	482	0.36	0.58	0.30	0.54
Boone et al. (2025) Sample 1	510	0.31	0.50	-	-
Boone et al. (2025) Sample 2	422	0.44	0.64	-	-
Emerson et al. (2023)	1119	0.36	0.47	0.35	-
Fynn (2022)	5400	-	-	-	0.26
Gaudreau and Benoît (2025)	376	-	-	-	0.62
Gonzalez et al. (2025)	1402	0.57	-	-	-
Koeske and Koeske (1991)	146	0.58	-	-	-
Maymon et al. (2019)	126	0.40	-	-	-
Moneta (2011)	226	0.37	0.53	0.32	-
Mostert and Pienaar (2020)	452	0.41	0.45	0.28	-
Nicita et al. (2025)	1497	0.52	0.66	0.47	-
Parviainen et al. (2020)	2889	0.21	0.48	-	-
Schriek et al. (2024)	1967	0.42	-	-	-
Turhan et al. (2022) Sample 1	597	0.34	0.60	0.48	-
Turhan et al. (2022) Sample 2	857	0.44	0.59	0.50	-
van Beek et al. (2013)	565	0.24	-	-	-
Williams et al. (2018)	2451	-	-	-	0.59
Xiao (2024)	227	-	-	-	0.41

the total heterogeneity of the weighted mean effect (Q^T). In the case of substantial heterogeneity, the data was analysed for outliers, which was followed by assessments of meta-bias and moderators.

Outlier Assessment

The outlier assessment involved examining a forest plot, residuals, and Cook's distance of individual effects. The forest plot allowed us to compare individual effects and their confidence intervals to the overall effect and confidence interval. It was then evaluated whether any of the individual effect sizes had residuals that exceeded three standard deviations as well as whether any of the individual effects were flagged for a Cook's distance of more than three times the mean. To determine whether any potential outliers had an impact on the overall effect, outliers were removed and the model without outliers compared to the model with outliers.

Meta-Bias

The meta-bias assessment included funnel plots, a multilevel extension of Egger's test of symmetry, and moderator analyses of methodological features. The plots included a traditional funnel plot and a sunset-enhanced funnel plot that integrated an estimation of statistical power of individual effects (see Kossmeier et al., 2020). Multilevel Egger's test of symmetry was then used to evaluate publication bias by regressing the overall pooled effect on to the standard error of individual effect sizes (Fernández-Castilla et al., 2019). Lastly, sample size was considered as a moderator of the overall pooled effect.

Moderator Analyses

The moderator analyses tested whether any demographic (age, percentage of females, country, level of study) or design factors (burnout measure, burnout dimension, dropout intentions measurement [single vs. multiple item measure, number of measure items]) contributed meaningfully to the overall model. Moderators that significantly reduced the heterogeneity from the overall model were considered potentially meaningful. Potentially meaningful moderators were included in a separate model. Heterogeneity in the baseline model was then compared to the model with moderators. Statistical significance indicated that the moderator model reduced heterogeneity and the moderators were thus considered meaningful.

Results

Following the recommendations of Campbell et al. (2020), first, a narrative synthesis of the findings of the included studies is provided. In doing so, we provide a description of the samples, the measures of burnout, the study designs, and then the risk of bias analyses. Studies are then grouped based on the examined dropout variable. For each outcome a discussion of the volume and quality of studies is provided. Details of each study are included in Tables 1 and 2.

Student Samples

The studies included a total of 39,454 students. The samples were on average 66.51% female (range 42.8 – 85%) and 22.55 years old (SD=4.11 years). Students were studying at undergraduate (k=13), on medical degrees (k=7), postgraduate (k=5), both undergraduate and postgraduate levels (k=6), secondary (k=1), and both secondary and undergraduate levels (k=2). Students were recruited from a range of countries: USA (k=6), Germany (k=4), Finland (k=3), Portugal (k=3), South Africa (k=3), China (k=2), Belgium (k=2), Canada (k=2), UK (k=3), Canada (k=2), Australia (k=1), Italy (k=1), Netherlands (k=1), Canada and USA (k=1), and across many countries (k=2).

Measurement of Burnout

In the present review, 21 studies adopted Maslach's conceptualization of burnout. This consisted of six studies utilizing the original Maslach Burnout Inventory (Maslach et al., 1986), 14 studies utilizing the MBI-student survey (Schaufeli et al., 2002), and one study using the MBI-General survey (Maslach et al., 2016). The remaining studies used a range of other conceptualizations. Five studies utilized the School Burnout Inventory (Salmela-Aro et al., 2009). Two studies utilized the Copenhagen Burnout Inventory (Kristensen et al., 2005). Two studies utilized the Burnout Assessment Tool (Schaufeli et al., 2020). One study used the Learning Burnout Scale (Yang et al., 2022). One study used the Utrecht Burnout Scale Student Version (Schaufeli & van Dierendonck, 2000). One study used the Oldenburg Burnout Inventory Student Ver-

sion (Reis et al., 2015). And one used a measure of academic exhaustion (Casanova et al., 2021).

Study Designs

The majority of studies were cross-sectional in design (25 out of 34). Two studies adopted prospective designs. Two study used cohort designs recruiting across three years. The remaining studies used a range of longitudinal designs (e.g., 3-month longitudinal, 5-month longitudinal, 3-year longitudinal). The primary analyses used in these studies can be found in Tables 1 and 2.

Risk of Bias

Risk of bias analyses suggested that there had been attempts to minimize sources of bias, but that not all sources of bias may have been addressed. The most common risks of bias related to the sample design (e.g., use of convenience samples), not controlling for confounding factors, and lacking precision of statistical estimates. The studies that had mitigated the greatest percentage of biases were those that had adopted longitudinal designs and had examined objective measures of dropout. Full details for each study can be found in Table 4.

Summary of Findings

We now provide a summary of the findings, and we do so grouped by type of dropout variable (dropout behavior, dropout intentions).

Dropout Behavior

Three studies measured actual dropout behavior (Bask & Salmela-Aro, 2013; Bumbacco & Scharfe, 2023; Nadon et al., 2024; see Table 1). Two did so via self-report (Bask & Salmela-Aro, 2013; Nadon et al., 2024). These studies used longitudinal designs and asked students if they had ever dropped out of education. In these studies, high levels of cynicism and inadequacy predicted higher dropout rates as did profiles reflecting high levels of overall (or total) burnout. In the final study, dropout behavior was measured prospectively via enrollment status in the next academic year (Bumbacco & Scharfe, 2023). In a structural equation model, burnout was a significant negative predictor of whether students continued in the next year of study. Finally, of note, these were the studies that had the lowest risk of bias in the quality assessment.

Dropout intentions

Thirty-one studies measured dropout intentions (see Table 2). Of these, 12 used single item scales and found that burnout was a significant positive bivariate correlate (e.g., Xiao, 2024), predictor in logistic regression analyses (e.g., Cortes et al., 2014), item in network analysis (e.g., Peng et al., 2023), and a latent predictor in structural

Table 4 Risk of bias assessment of included studies

Study	1.1	1.2	1.3	2.1	2.2	2.3	2.4	3.1	3.2	3.3	3.4	3.5	4.1	4.2	4.3	4.4	5.1	5.2
Bask and Salmela-Aro (2013)	++	+	+	+	++	NA	-	++	++	++	NA	++	+	+	+	-	++	+
Bélanger and Ratelle (2021)	+	+	+	+	++	NA	+	+	+	+	NA	NA	+	++	++	-	+	+
Boone et al. (2025) Sample 1	++	+	+	+	+	NA	-	+	+	+	NA	+	+	+	+	+	+	+
Boone et al. (2025) Sample 2	++	+	+	+	+	NA	-	+	+	+	NA	+	+	+	+	+	+	+
Bumbacco and Scharfe (2023)	+	-	-	+	+	NA	-	++	+	+	NA	NA	-	+	+	+	+	+
Cage and McManemy (2022)	++	+	++	+	+	NA	+	+	-	+	NA	NA	-	+	+	+	+	+
Calcatin et al. (2022)	+	+	+	+	+	NA	+	+	+	+	NA	NA	++	+	++	+	+	+
Cortes et al. (2014)	+	-	+	+	+	NA	+	+	+	+	NA	NA	+	+	+	+	+	+
Dyrbye et al. (2010) Sample 1	+	+	+	+	+	NA	+	+	+	+	NA	NA	+	+	+	+	+	+
Dyrbye et al. (2010) Sample 2	+	+	+	+	+	NA	+	+	+	+	NA	++	+	+	+	+	+	+
Emerson et al. (2023)	+	+	+	+	++	NA	+	+	+	+	NA	NA	+	+	+	+	+	+
Fynn (2022)	+	+	+	+	+	NA	-	+	+	+	NA	NA	+	+	+	+	+	+
Gaudreau and Benoît (2025)	+	+	+	+	+	NA	+	+	+	+	NA	NA	+	++	++	+	+	+
Gonzalez et al. (2025)	++	+	+	+	++	NA	+	+	+	+	NA	NA	+	+	++	+	+	+
Koeske and Koeske (1991)	+	-	+	+	+	NA	+	+	+	+	NA	NA	-	+	+	+	+	+
Marôco et al. (2020)	++	++	+	+	+	NA	+	+	+	+	NA	NA	++	+	++	+	+	+
Maymon et al. (2019)	+	+	+	+	+	NA	+	+	+	+	NA	NA	-	+	+	+	+	+
Medisauskaite et al. (2025)	++	+	++	+	+	NA	+	-	+	+	NA	+	+	+	+	+	+	+
Moneta (2011)	+	+	-	+	+	NA	+	+	+	+	NA	NA	+	+	+	+	+	+
Mostert and Pienaar (2020)	-	+	-	+	-	NA	+	+	+	+	NA	NA	+	+	+	+	+	+
Nadon et al. (2024)	++	+	+	+	++	NA	+	++	++	++	NA	++	+	+	+	+	++	+
Nicita et al. (2025)	+	+	+	+	+	NA	+	+	+	+	NA	NA	++	+	++	+	+	+
Parviainen et al. (2020)	++	+	+	+	+	NA	+	+	+	+	NA	NA	++	+	++	+	+	+
Peng et al. (2022)	++	+	+	+	+	NA	+	+	+	+	NA	NA	++	+	+	+	+	+
Peng et al. (2023)	++	+	+	+	+	NA	+	+	+	+	NA	NA	++	+	-	+	+	+
Phekni (2023)	+	+	+	+	++	NA	+	+	+	+	NA	NA	-	+	+	+	+	+
Schriek et al. (2024)	++	+	+	+	+	NA	+	+	+	+	NA	+	++	+	++	+	+	+
Sinval et al. (2024)	++	+	+	+	+	NA	+	+	+	+	NA	NA	+	+	+	+	+	+

Table 4 (continued)

Study	1.1	1.2	1.3	2.1	2.2	2.3	2.4	3.1	3.2	3.3	3.4	3.5	4.1	4.2	4.3	4.4	5.1	5.2
Turhan et al. (2022) Sample 1	+	+	+	+	+	NA	+	+	+	+	NA	NA	++	+	+	+	+	+
Turhan et al. (2022) Sample 2	+	+	+	+	+	NA	+	+	+	+	NA	NA	++	+	+	+	+	+
Turhan et al. (2023)	++	+	+	+	+	NA	+	+	+	+	NA	+	++	+	+	+	+	+
van Beek et al. (2013)	+	-	-	+	+	NA	+	+	+	+	NA	NA	+	+	++	+	+	+
Williams et al. (2018)	++	+	++	+	++	NA	+	+	+	+	NA	NA	++	++	++	+	+	+
Xiao (2024)	++	+	+	+	+	NA	+	+	+	+	NA	NA	+	+	+	+	+	+

Note. + + =minimized risk of bias. + =may not have addressed all sources of bias. —=significant sources of bias may persist. NA=Not applicable. [1.1]Population well described. [1.2]Population is representative. [1.3]Selected participants represent eligible population. [2.1]Selection bias minimised. [2.2]Theoretical basis. [2.3]Contamination low. [2.4]Confounding factors identified. [3.1]Outcome measures reliable? [3.2]Outcome measurements complete? [3.3]All important outcomes assessed? [3.4]Similar follow-up time in exposure and comparison group? [3.5]Follow-up time meaningful? [4.1]Power analysis. [4.2]Multiple explanatory variables considered? [4.3]Analytical methods appropriate? [4.4]Precision. [5.1]Are the results valid? [5.2]Are the findings generalisable? [Criteria [2.5](Setting applicable to the UK) was removed from the checklist]

models (e.g., Marôco et al., 2020). The remaining studies used multiple item scales. Specifically, four studies used two items (e.g., Bélanger & Ratelle, 2021), eight studies used three items (e.g., Emerson et al., 2023), two used four items (e.g., Nicita et al., 2025), three used five items (e.g., Phekni, 2023), one used six items (Maymon et al., 2019), and one use ten items (Williams et al., 2018). In all instances where bivariate correlations were examined, burnout was a significant positive correlate (e.g., Bélanger & Ratelle, 2021; Moneta, 2011; Nicita et al., 2025). This was also the case in multiple regression (Phekni, 2023), path modelling (Williams et al., 2018), latent structural modelling (Sinval et al., 2024), profile analysis (Turhan et al., 2022), and latent growth curve modelling (Turhan et al., 2023). Across studies, the risk of bias was reasonable however there were issues related to more commonly used cross-sectional designs, controlling for compounding factors, and precision of estimates.

Results of Meta-Analysis

The results of the meta-analyses for dropout intentions are presented in the following sections (effect sizes used in the meta-analyses can be found in Table 3 and Figures can be found in the Supplementary Materials [S1 and S2]).

Pooled Effect and Heterogeneity

The overall pooled effect for the association between burnout and dropout intentions was $r^{+} = .46$ (95% $CI = .44$ to .55, $p < .001$, $z^{+} = .49$, $k = 37$, see Figure S1 for forest plot). The likelihood ratio tests revealed significant variance in effects within studies (level 2; $LRT = 310.36$, $p < .0001$) but not between studies (level 3; $LRT = 0.00$, $p = 1.00$), which suggested the partitioning of variance at the within-level, but not the between-level, was meaningful. The variability in observed effects was found to be larger than expected based on sampling variability ($Q^{T}_{(36)} = 1028.44$, $p < .0001$).

Outlier Analyses

The outlier analyses did not highlight any individual effects that had residuals that exceeded three standard deviations. However, four individual effects were flagged with a Cook's distance of three times the mean. The exclusion of these effects had very little consequence on the overall pooled effect ($r^{+} = .46$, 95% $CI = .44$ to .54, $p < .0001$, $z = .49$). Together, these results suggested that the overall pooled effect was largely robust to outliers and influential cases.

Meta-Bias

The traditional funnel plot showed that the meta-analysis predominantly included larger samples (smaller standard error) that clustered tightly around the mean effect (see Figure S2a). This visual inspection indicated that individual effects were roughly symmetrical and evenly distributed. This was supported by the multilevel extension of Egger's test that suggested symmetry in the funnel plot ($F_{(1,35)} = 0.0001$, $p = .99$). Sample size showed to be a non-significant predictor of the overall pooled effect

($F_{(1,35)}$=0.0001, p=.99). Overall, the traditional funnel plot, multilevel extension of Egger's test and methodological moderators suggested the meta-analytic data were influenced minimally by publication bias. The power-enhanced funnel plot further showed that none of the individual effect sizes fell under the commonly adopted 80% power (see Figure S2b; assumed true effect=.45). This was reflected in the median power (med_{power}=100%). As such, the likelihood of false positive being included in the current meta-analysis was low.

Moderator Analyses

The moderator analyses evaluated moderators based on demographics (age, percentage of females, country, level of study) and design (burnout measure, burnout dimensions, dropout intentions measurement [single vs. multiple item measure, number of measure items]). Level of study ($F_{(3,33)}$=4.45, p<.01) and burnout dimension ($F_{(3,33)}$=17.74, p<.0001) showed to have a significant effect on the overall pooled effect. When Secondary education was set as the reference level, Postgraduate education had a significant positive effect (z=.24, p=.04). When total burnout was set as the reference level, exhaustion (z=-.15, p=.02) and inefficacy (z=-.16, p=.03) had significant negative effects. We then tested whether the full model with relevant moderators significantly reduced the degree of heterogeneity compared to the model without the moderators. The addition of moderators was found to significantly reduce heterogeneity ($Q_{(30)}$=1028.44, p<.0001). However, the residual heterogeneity remained statistically meaningful ($QE_{(30)}$=348.31, p<.0001).

Discussion

The present study aimed to provide the first systematic review and meta-analysis of research examining the relationship between student burnout and educational dropout. Our systematic review found evidence that burnout was positively associated with both direct (dropout behavior) and indirect measures of dropout (dropout intentions), albeit with much more evidence for the latter. Our meta-analysis provided further evidence for a positive and significant cross-sectional relationship between student burnout and dropout intentions. We also found that these effects were moderated by level of education and burnout dimension. We now provide a discussion of the key findings and theoretical implications, and we end with implications for policy and practice.

Key Findings

Educational dropout is a global problem. In the present review, similar to research in the workplace (e.g., Lee & Ashforth, 1996), we found that burnout – an increasing experiential phenomenon among students – could be part of this problem. Studying requires motivation and persistence, but can also be demanding. Over time, excessive demands can lead to burnout which itself, if left unmitigated, likely drives behavioral withdrawal and disengagement from studying (Shin et al., 2014), and it appears that

it can culminate in an increased likelihood that students will desire to leave their educational courses, and, although there is less evidence currently available, in some cases they may even leave entirely. Burnout should therefore be considered central in further work attempting to unpick the increasingly problematic issue of educational dropout.

Actual dropout behavior is particularly difficult to measure. This is reflected in the few studies that had adopted this measurement approach in the present review (e.g., Bumbacco & Scharfe, 2023). However, even though only these handful of studies exist, the findings are reasonably consistent – burnout appeared to predict increased dropout over time. Importantly, the included studies had used self-reported dropout, and only one that had collected objective enrollment data (Bumbacco & Scharfe, 2023). This latter study did, however, adopt a longitudinal design and, in doing so, it provides initial evidence for temporal ordering of burnout preceding dropout (e.g., MacKinnon et al., 2002). A note of caution here is obviously warranted in terms of both the fact this was the only study to do so and it establishes temporal precedence rather than causality per se. Although collectively these findings provide the best evidence yet that burnout may have something to say about dropout behavior, much more research is necessary before broad conclusions can be made.

Dropout intentions are much easier to quantify, and this is reflected in the many more studies in the present review using this approach. Given that intentions are strongly related to actual dropout behavior they are a particularly useful proxy for dropout and will likely reflect those most at risk of doing so (Findeisen et al., 2024). Again, in the present review, across a large number of studies, with different designs and analyses, burnout was found to be a significant and positive correlate and predictor of dropout intentions. In combination with other reviews on dropout intentions in the workplace, including for teachers (Madigan & Kim, 2021), these findings reiterate the relevance of burnout for the development of conscious plans (intentions) to leave both education and the workplace.

Our multilevel meta-analyses incorporating effects across studies further reinforced the idea that burnout is relevant to dropout, at least cross-sectionally. In this regard, we found that burnout showed a significant and positive meta-correlation with dropout intentions. This overall effect could be considered large and comparable to meta-analyses in other contexts (e.g., Lee & Ashforth, 1996; Madigan & Kim, 2021). Overcoming potential sampling issues and other risk of biases in individual studies, the meta-analyses also provide the most precise estimates of this relationship to date. These findings, then, offer strong evidence that can be used to inform future research (e.g., basis for power calculations; Sutton et al., 2007). More studies, however, are necessary before we can draw meta-analytic conclusions concerning dropout behavior.

We also found evidence that the meta-analytic effect was heterogeneous and thus we explored possible moderating factors. In this regard, we found two notable moderators. First, we found level of education to be important and, in particular, that the effect sized increased as educational level increased. There is evidence that mental health and wellbeing problems in general are high amongst postgraduate students (e.g., Milicev et al., 2023). In addition, postgraduate education can be more demanding than undergraduate study and, too, that dropout rates have been found to be higher

(Kaggwa et al., 2021). The fact, then, that burnout was a stronger predictor of dropout intentions here may have implications for understand these higher rates. Postgraduate students may therefore be a population who may particularly benefit from further research exploring burnout's possible role in dropout.

Second, we found that the burnout dimension that was examined was important. Unlike in the workplace where exhaustion is the main driver of dropout intentions (Madigan & Kim, 2021), we found that cynicism may be most important for students. As to why these differences exist, we think it may relate to the alternate options available for workers versus students. For example, it may be more difficult for individuals in the workplace (including teachers) to leave their jobs when they stop caring and become disconnected, and this is perhaps due to greater commitments (e.g., financial, family, peers), and so they are more likely to leave when they have nothing left to give (i.e., they are exhausted). While for students, it is possible that the development of mental distance from their studies has implications for their motivation and results in withdrawal behaviors that are more likely to underpin, at least, the development of intentions to dropout, if not dropout itself.

We also note that although these identified moderators are informative, because substantial heterogeneity remains, they do not fully explain variation in the observed effect sizes. There are likely many other possible sources of the remaining heterogeneity. These include differences between educational systems, degree programmes, year of study, timing of measurement, academic demands and resources, academic performance, financial pressure, and mental health comorbidity. The effects should be interpreted in context of, this issue. Further work is, therefore, necessary to explore these possibilities to help us fully understand when and where burnout is more (or less) problematic in relation to dropout intentions.

Theoretical Implications

This review was grounded in Study Demands-Resources Theory (Bakker & Mostert, 2024). The theory posits that excessive study-related demands underpin burnout development and that burnout is a mediator between these demands and negative academic outcomes such as dropout. However, this model, and educational psychology theory in general has less to say about *how* burnout may lead to these negative outcomes. We articulated a position on, this issue using on a combination of stress and motivation theories and burnout theory from outside of education. We think that the present findings, then, have implications for burnout theory in education. In this regard, we suggest that it may be appropriate to incorporate some of the possible mechanisms underpinning the burnout-dropout relationship into Study Demands-Resources Theory. This could include expanding the self-defeating behaviors that have been provided (e.g., procrastination) to include various other maladaptive or ineffective coping strategies based around avoidance of demands such as withdrawal of effort or presence. Motivational processes may also be helpful including competence and self-efficacy appraisals. We suggest that this updated model could be tested using sequential (serial) mediation modelling (demands → burnout → mechanisms → dropout). It could also be expanded to include many further academic outcomes that are relevant to burnout (e.g., academic achievement; Madigan & Curran, 2021).

The findings that postgraduate students may be more at risk of the consequences of burnout may also have interesting theoretical implications. Notably, currently, Study Demands-Resources Theory does not make explicit distinctions between levels of higher study. Such a distinction may therefore be warranted especially given that the nature and volume of demands may differ substantially between undergraduate and postgraduate study. Similarly, we think it would be useful to further explore other conditions under which burnout may be more common – for example, during times of increasing demands (such as exam periods; e.g., Fernández-Castillo, 2021). Incorporating these into the theory may be especially useful to support the design and implementation of interventions.

We also theorized that burnout may show a stronger relationship with dropout intentions than with dropout behavior. Given the lack of studies examining dropout behavior we were not able to come to any definite conclusion in this regard. We therefore think that this proposition can be cautiously taken forward to be tested in future work. In doing so, we would welcome work incorporating more comprehensive and long-term designs to do so. This could include large cohort studies that are linked to educational records. To further explore the personal and economic consequences of dropout, such studies could also begin to collect information on where students go after they have dropped out. We note here that collaborative partnerships between researchers and educational institutions both nationally and internationally are likely essential to recruit sufficient sample sizes to do so.

Burnout research more broadly has been criticized for its lack of theory (e.g., Nadon et al., 2022). With the increased recognition of the role burnout plays in education we are in a position to work towards its inclusion in educational psychology theory. We think that the integration of these ideas into existing models (e.g., Study Demands-Resources Theory) offers a good starting point to build a more complete theory of student burnout.

Implications for Policy and Practice

The present findings have implications for those working to improve education policy and practice. Notably, UNESCO Sustainability Development Goals (2016) that monitor school-level completion rates, highlight the need to reduce dropout. As such, although tentative in terms of causal findings and the small amount of evidence in terms of dropout behavior from the present review, future work aimed at understanding whether reducing burnout is one such viable means to help is warranted. In terms of burnout prevention, there is also a growing body of work that may be useful. Recently, for example, Madigan et al. (2023) reviewed interventions to reduce student burnout. Their review identified individual-level interventions that may be effective in doing so including mindfulness-based approaches and rational emotive behavior therapy. Much like for teachers (Iancu et al., 2018), however, interventions appear less effective for cynicism. This work provides some guidance, then, but much more research is needed. Similarly, very little evidence for effective organizational-level intervention exists. Future work should prioritize such studies as this approach – targeting many individuals at once – may have the broadest effects for the most

students. In regards to the latter, Madigan et al. (2026) recently introduced the concept of student burnout literacy (i.e., knowledge and beliefs about burnout) so as to provide one means to support primary prevention. If future research is able to confirm the link between student burnout and dropout behavior, interventions (such as educational toolkits) to enhance burnout literacy may be a scalable means to reduce burnout and its impact on educational outcomes.

Conclusion

The present review provides the first comprehensive synthesis of research on student burnout and educational dropout. Across narrative and meta-analytic summarizes of the literature, burnout was associated with dropout. This was consistently the case for dropout intentions, but we note that considerably less evidence was available with regards to dropout behavior. Further work is necessary integrating and testing theory, including, examining possible mechanisms underpinning these relationships, and doing so by employing robust longitudinal designs. Preventing student burnout could be an effective means to help ensure students continue to study and reap the benefits associated with successful further and higher education, but further research is warranted to determine the full degree to which this is the case.

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Declarations

Competing interests The authors have no relevant financial or non-financial interests to disclose.

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Authors and Affiliations

Daniel J. Madigan[1] · Hanna L. Glandorf[1,2,3]

✉ Daniel J. Madigan
d.madigan@yorksj.ac.uk

[1] York St John University, York, UK

[2] Lohfert & Lohfert AG, Rothenbaumchaussee 76, 20148 Hamburg, Germany

[3] National Research Center for Youth Sports, Karlstad University, Karlstad, Sweden