

Research Report

Studying and More: Part-Time Employment as an Educational Challenge?

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Abstract.

Background: Future health-care professionals face stress both during education and in later professional life. Next to educational trainings, many students are forced to assume part-time employment.

Objective: Applying the Job Demands-Resources Model to the educational context, we investigate which role part-time employment plays next to health-care professional students' education-specific demands and resources in the prediction of perceived stress.

Method: In this cross-sectional study, data from $N = 161$ health-care students were analysed, testing moderation models.

Results: Education-specific demands were associated with higher and education-specific resources with lower amounts of perceived stress. Part-time employment functioned as moderator, i.e. demands were less associated with stress experiences in students who were employed part-time.

Conclusion: Identifying part-time employment as a resource rather than a demand illustrates the need to understand students' individual influences on stress. Both educators and students will benefit from reflecting these resources to support students' stress management.

Keywords: Education, stress, employment, JD-R model

INTRODUCTION

Current changes in societal life as well as educational settings lead to health care professionals being faced with increasing stress both in professional life and during their educational period [1–3].

In addition to the specific challenges and benefits of studying, paid employment of health care students has attracted the interest of health educators and health policies [4]. In line with that, the present study also focuses the role of students' part-time employment for two reasons: On the one hand, many students seek employment to supplement income while studying [5]. On the other hand, literature on students' part-time employment is still inconsistent, showing positive and negative effects of employment for students [6].

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The job demands-resources model

To understand in how far part-time employment affects students' stress experiences, we use the Job Demands-Resources Model (JD-R model) as theoretical framework [7]. Based on the transactional approach, the JD-R model describes stress as a result of (1) the demands, an individual is faced with, and (2) individual resources. Originally, it applies the interplay of demands and resources in the realm of work. Up to now, only few studies have investigated the interaction of students' demands and resources on stress and burnout experiences or explicitly investigated the JD-R in nurses samples [8–12].

Demands, as defined by the JD-R model, require sustained physical and mental efforts with a risk of detrimental effects on health and well-being [13]. Despite individual differences, there are repeatedly reported educational demands such as high workload, examinations, high self-expectations or competition among students, interpersonal difficulties, which affect well-being and goal achievement [2, 14, 15], as well as demands from outside the educational context [16]. Fortunately, such demands do not necessarily affect performance and academic achievements [17]. In line with the transactional idea [18], in the educational setting perceived resources can buffer potentially detrimental effects of demands on perceived stress.

Resources support goal achievement and coping with demands and stimulate personal development [13]. They comprise personal competences as well as social support. In the educational context, the confidence in one's competences increases academic performance as well as students' well-being [19]. Receiving social support or even providing support increase competence beliefs and well-being [20, 21]. Students receiving social and team support report increased levels of academic satisfaction and adjustment [22, 23].

Initially, the JD-R model proposed main effects of demands and resources as stress-risk factors on the development of burnout. Additionally, the model also proposes that appropriate resources are able to buffer negative impact of high demands on the development of stress and burnout symptoms [24]. While limited to job-specific demands and resources in its prior version, the revised JD-R model also includes positive, motivational processes as well as non-specific resources like emotional and mental competences [24, 25]. In the present study, we investigate education-specific instead of job-specific

demands and resources and utilize the idea of inferences from further non-specific challenges that students usually face.

Part-time employment

As described above, many students assume part-time employment in order to finance their education [8, 26]. Does part-time employment affect students' stress experiences and does it interact with education-specific demands and resources? Stressors such as physical and emotional exhaustion, working outside regular hours, and dealing with a number of role expectations accompany part-time employment [27]. Consequently, academic performance and students' well-being may become negatively affected, especially in case of excessive time in professional involvement [16, 28, 29]. Additionally, students might experience increased stress due to an ambiguity relating to the inexorable situation of experiencing negative effects on school performance on the one hand, while needing to work in order to finance school [30]. However, part-time employment in addition to one's current education may also foster resources such as time management or other skills gained from the employment [31].

Aims of the study

The study aimed at identifying and understanding influences on students' stress experiences, testing the role of part-time employment in addition to education-specific demands and resources. In accordance to JD-R's main effect assumption, we hypothesize that education-specific resources (H1) are negatively associated with students' stress. We also hypothesize that education-specific demands (H2) are positively associated with students' stress.

With regard to inconsistent findings on part-time employment in the literature and the idea that part-time employment might not only be considered as a demand but be valued as a resource [31]. Therefore, in two additional models we explore the interaction of part-time employment and resources or demands, respectively, in the prediction of students' stress experiences.

MATERIALS AND METHODS

Design

This cross-sectional study involved German full-time health care professional students (e.g., nursing,

paediatric nursing, medical-technical assistance). At midterm, a total of $N=224$ students were invited to participate in a survey, $n=163$ (M age = 21.17, $SD=1.78$; 79.8% female) agreed. After informed consent, questionnaires were completed in an anonymous manner. Two participants who did not provide any data were excluded. Thus, the final sample included $n=161$ students. Participants were in their first (40.4%), second (29.8%) or third (29.8%) year of education. The study was conducted in accordance with the ethical principles of the Declaration of Helsinki.

Measures

Demands and resources questionnaire

Prior to this study, we had conducted a pilot study to identify education-specific demands and resources: In an open format, $N=39$ students had reported on the most relevant demands and resources which they perceived to affect their vocational education. Items for the Demands and Resources Questionnaire used in the present study were based on the nine most frequently mentioned demands and resources, respectively. In the present study, students were provided with a definition of resources and demands and were asked to indicate to what extent these listed education-specific resources and demands existed in the last four weeks. Items were assessed on a 10-point-Likert-Scale (1 = to a lesser extent, 10 = to a vast extent). Factor analysis identified homogenous items for the operationalization of education-specific demands and resources: Out of nine demands, five demands (i.e. test anxiety, high workload, high expectations of oneself, high expectations of others, pressure to perform and competition) loaded on one factor (Eigen value = 2.65, factor loadings between 0.61 and 0.83). We excluded items representing more heterogeneous, education-unspecific demands (i.e. long journey to work, financial worries, double burdens, and collegial disagreements). Out of nine resources, five resources (i.e. support by fellow students, support by colleagues, positive future prospects, enjoyment of work, competences to support others) loaded on one factor (Eigen value = 2.52, factor loadings between 0.62 and 0.76). Again, we excluded items representing more heterogeneous, education-unspecific resources (i.e. friends and family, pets, sports, and relaxation techniques). Mean scores were computed, ranging between 1 and 10 (demands $\alpha = 0.77$, resources $\alpha = 0.75$).

Part-time employment

Students reported whether they were employed part-time (0 = no, 1 = yes).

Perceived stress

Self-rated stress experiences within the past four weeks were assessed using the Perceived Stress Questionnaire, a widely used and validated instrument [32]. A total score of the 20 items was calculated, ranging between 0 and 100 with higher values representing a higher amount of perceived stress ($\alpha = 0.90$).

Data analysis

Three hierarchical regression models were used to test our hypotheses, considering perceived stress as dependent variable. The first step controlled for year of education. To test our main effect hypotheses H1 and H2, main effects of education-specific demands and resources accompanied by part-time employment were included in the second step. To explore the interaction of demands and resources and their interaction with part-time employment, respectively, in the final step, the respective interaction term was included in the model. Variables were mean-centred. Calculations were supported by the PROCESS macro for SPSS using PROCESS-model 1 [33]. This model tests regression analyses with two-way interactions and - in case of significant interactions - estimates conditional effects of the predictor at combinations of high and low clause of the moderators (mean and plus/minus one standard deviation) in line with simple slope analyses [34].

RESULTS

Overall, students perceived a medium amount of demands ($M=6.42$, $SD=1.98$) and a somewhat greater amount of resources ($M=7.04$, $SD=1.54$). Students perceived a low to medium amount of stress ($M=42.40$, $SD=17.19$). Only 18.6% of the students were employed on a part-time job.

Perceived stress was bivariate associated with higher demands ($r=0.56$, $p<0.001$) and less resources ($r=-0.39$, $p<0.001$). It was unrelated to part-time employment ($r=-0.05$, $p=0.56$). Means, standard deviations and correlations of study variables are shown in Table 1.

Hypotheses were tested using three multiple regression models. Since educational demands ($r=0.37$, $p<0.001$) and perceived stress ($r=0.32$,

Table 1
Means, standard deviations and correlations for all study variables

	<i>M</i>	<i>SD</i>	1.	2.	3.	4.	5.	6.
1. Age	21.17	3.86						
2. Sex ¹	–	–	0.14					
3. Year of education	1.89	0.83	0.24**	–0.05				
4. Demands	5.74	1.76	0.12	–0.23**	0.40***			
5. Resources	7.05	1.41	–0.08	–0.01	–0.10	–0.02		
6. Part-time employment ²	–	–	0.06	0.11	0.01	–0.09	0.09	
7. Perceived stress	42.40	17.19	0.10	–0.22**	0.32***	0.56***	–0.39***	–0.05

Note. ¹ 1 = female, 2 = male; ² 0 = no, 1 = yes; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

$p < 0.001$) varied across years of education, the latter were included as a covariate. To test our hypotheses, we regressed perceived stress on year of education in the first step, education-specific demands and resources as well as part-time employment in the second step and respective interaction terms in the final step. Regarding our main effect assumption of education-specific demands and resources, findings from the second step of hierarchical regression models were considered. In line with hypotheses H1, education-specific resources ($B = -3.68$, $SE = 0.68$, $p < 0.001$) were associated with less perceived stress. Additionally, in line with hypotheses H2, education-specific demands were strongly associated with increased perceived stress ($B = 4.00$, $SE = 0.61$, $p < 0.001$).

To respectively test whether education-specific resources buffered the effect of education-specific demands on perceived stress, we included the interaction term of demands and resources in the final step. The interaction of education-specific demands and resources did not reach significance (see Table 2, Model 1).

In further moderation analyses, part-time employment was used as moderator of the association between education-specific demands or resources and perceived stress, respectively, controlling for education-specific demands, resources, and years of education. Part-time employment was neither associated with perceived stress ($B = 1.52$, $se = 2.61$, *n.s.*) nor did it interact with education-specific resources ($B = -2.07$, $SE = 1.85$, *n.s.*; see Table 2, Model 2).

However, with a small effect ($f^2 = 01$) the interaction term of part-time employment and education-specific demands reached significance ($B = -2.79$, $SE = 1.23$, $p = 0.02$; see Table 2, Model 3). The conditional effect of demands on perceived stress was much stronger in students without part-time employment ($B_{\text{cond.}} = 5.28$, $SE = 0.62$, $p < 0.001$), than in students employed part-time ($B_{\text{cond.}} = 2.48$, $SE = 1.09$, $p = 0.02$).

In additional *post hoc* analyses, we explored whether rather education-*unspecific* demands and resources affected stress in the same way as education-specific resources and demands: Considering financial worries as *unspecific*, we found no significant interaction with part-time employment in the prediction of stress ($B = 1.16$, $SE = 0.90$, $p = 0.20$). With regard to *unspecific* resources, we found neither a significant main ($B = -0.08$, $SE = 0.38$, $p = 0.84$) nor an interaction effect ($B = -0.39$, $SE = 0.97$, $p = 0.69$) of sport on stress. Instead, we found an interaction between part-time employment and family/friends ($B = -3.81$, $SE = 1.66$, $p = 0.02$), in that part-time employment was most strongly associated with stress when family/friends were less evaluated as a resource.

DISCUSSION

In light of an improved understanding of demands in the academic career of health care education students, we aimed at investigating influences on students' stress experiences with a specific focus on part-time employment and its interplay with students' educational demands and resources. To our knowledge, this is one of the first studies, which applies the JD-R model to the context of vocational education.

In line with the JD-R assumptions and hypotheses H1 and H2, education-specific demands and resources were directly associated with students' stress experiences. Although previous studies showed similar main effects for various samples, including nurses and other health professionals [11, 12, 35, 36], these findings are noteworthy, because thus far only few studies have investigated student samples [10]. Our findings encourage the application of the JD-R model to the educational setting.

Even though the overall literature on part-time employment in students presents with inconsistent findings, the majority of studies shows detrimental

Table 2
Multiple regression models predicting perceived stress

	Model 1			Model 2			Model 3					
	B	SE	t	p	B	SE	t	p	B	SE	t	p
Demands (D)	4.64	0.56	8.22	0.001	4.57	0.56	8.15	0.001	4.76	0.56	8.56	0.001
Resources (R)	-4.15	0.66	-6.27	0.001	-4.23	0.66	-6.37	0.001	-4.27	0.65	-6.53	0.001
Part-time employment ¹	1.46	2.62	0.56	0.58	1.99	2.64	0.75	0.45	0.82	2.59	0.32	0.75
Year of education	1.28	1.34	0.96	0.34	1.36	1.33	1.03	0.31	1.05	1.32	0.80	0.43
D × R	-0.12	0.32	-0.34	0.71	-2.07	1.85	-1.12	0.26	-2.79	1.23	-2.27	0.02
	$R^2 = 0.46; F(5,155) = 26.70, p < 0.001$				$R^2 = 0.47; F(5,155) = 27.12, p < 0.001$				$R^2 = 0.48; F(5,155) = 28.58, p < 0.001$			

Note: ¹0 = no part-time employment (PTE), 1 = part-time employment (PTE); final step of hierarchical regression models.

effects of part-time employment on students' academic performance and well-being [29]. Findings in our study suggests that pre-defining part-time employment as a *demand* or *resource* does not do justice to students' experiences. Although students in part-time employment need to manage and organize both education and employment, part-time jobs may also provide significant benefits: First, students with part-time employment also acquire management skills by coordinating education and job [6]. Especially time management skills help to overcome stress experiences and to increase academic performance and life satisfaction [37, 38]. Second, the impact of part-time employment depends on the nature of the employment. Especially employments in study-related work contexts offer opportunities for student learning [6]. In sum, our findings suggest that part-time employment allows students to gain practical and self-regulatory skills, which in turn support academic achievement and resilience in the face of academic challenges [26, 31]. In the present study, this point of view was supported by part-time employment buffering education-specific demands in the prediction of students' stress experiences. However, future research should identify between further education-specific and -unspecific demands and resources, which interact with part-time employment. Such knowledge might allow targeted support for students in coping with challenges that stem from students' dependence on paid employments during education.

Limitations

Besides these encouraging findings, the following limitations should be addressed: First, previous studies have shown that the quality and quantity of part-time employment make a difference [39]. The use of a dichotomous measure is a weakness of the present study, providing no information on e.g., employment type, income, number of working hours, or subjective appraisals of the employment, which might affect how both education and employment can be combined [29]. Future studies should take consideration of these job characteristics.

Second, demands and resources lack thorough operationalization. Although reported by students from the same setting and despite certain content overlaps with items from other studies [11], validity of these measures has yet to be tested. It is possible that this might have made it more difficult to detect buffer effects in the prediction of students'

self-rated stress experiences because commonly these effects are rather weak [24, 40]. Another explanation could be that in order to buffer demands, resources may have to match demands from the same domain [41]. We investigated stress experiences in a heterogeneous sample of health care students at various points of their education, which might concur different kinds of demands [42]. Moreover, we used composite scores of self-addressed education-specific demands and resources in the present study, which may have obscured the differential impact [40]. In future studies, improved operationalisations should allow participants to specify individual resources which match differential demands they face.

Finally, the JD-R model was applied to the education context in order to predict students' stress experiences rather than burnout. However, stress can be understood as a risk factor in the development of burnout symptoms. In accordance to the revised JD-R model [24], future studies in the realm of education should additionally consider motivational processes to predict students' study engagement and confirm our cross-sectional study using longitudinal analyses [25].

Conclusion

Using the JD-R model in the educational context allows identifying education-specific demands and resources as determinants of students' stress experiences. Regarding to the beneficial direct effects of education-specific resources, our findings imply that resources per se help to strengthen stress management. To better understand students' antecedents of stress, subjective evaluations of both education-specific and -unspecific demands and resources have to be taken into account. Both educators of future health care professionals and students themselves will benefit from reflecting education-specific and students' education-unspecific challenges to support students' stress management during education and in preparation for professional life.

The present study identified part-time employment as students' non-educational resource, which appears to help buffer education-specific demands. The dual roles of a student and part-time employee rolled into one represents a model, which should be considered not only by students themselves, but also by educators, policy makers, and researchers. Future research should distinguish between of part-time employments that increase or decrease academic achievement and identify specific skills promoted by

part-time employment. Consequently, educators need to be aware of students who operate within this dual roles model to provide tailored guidance and support students' stress management. Policy makers should take notice of it and should support the development of appropriate educational environments and political promotion of this dual roles model.

Overall, this study encourages health care professionals to be aware of their individual resources during their educational period and in their future professional life.

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CONFLICT OF INTEREST

The authors have no conflict of interest to report.

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