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1   Abstract

2   The present study examined the relationships between work-related characteristics in

3   internships, psychological needs satisfaction, motivation and mental health using a partial

4   least squares path modeling. Midwifery students (N= 214; M_{age} = 22.8 years) from three

5   French schools completed different questionnaires online. Results showed (1) the importance

6   of work resources (work control and social support) as protective factors of psychological

7   needs satisfaction; and (2) the role of competence need satisfaction through motivation in the

8   relationships between work resources and mental health. Midwifery schools should pay more

9   attention to these two results, and take them into account in midwifery students' training.

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11   *Keywords*: self-determination, midwifery students, psychological needs satisfaction,

12   motivation, mental health

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1   Relationships between Work-related Characteristics, Needs Satisfaction, Motivation and

2   Mental Health in Midwifery Students

3   In midwifery studies, internships in hospitals are a vital component of the student experience.

4   Some studies have pointed out that internships were often recognized as work-stressful places

5   (e.g., Carolan-Olah & Gruger, 2014), and too much work-related stress might have negative

6   effects on students' learning and success (e.g., Sarikaya, Civaner, & Kalaca, 2006), and can

7   cause mental health problems (e.g., Gammon & Morgan-Samuel, 2005). Indeed, learning

8   occurs though interaction in the environment and the conflicting demands of being both a

9   learner and an emerging professional can be particularly a difficult experience physically and

10   stressful, for students when the environment is not conductive to learning (Flenghi, 2012;

11   Pearcey & Elliott, 2004). Thus, it seems necessary to gain insight into the psychological

12   processes underlying the relationships between work-related characteristics and mental health.

13   Few studies have focused on the interplay between work-related characteristics in internships,

14   psychological needs satisfaction, motivation and mental health. Consequently, the present

15   study examined these relationships using a partial least squares path modeling approach (PLS-

16   PM; Sanchez, 2013).

17   One theory on which we can rely for this study is the self-determination theory (SDT,

18   Deci & Ryan, 1985). SDT has shown the existence of three innate basic needs: autonomy

19   need (the need to experience volition, freedom in one's actions and choices), competence

20   need (the need to feel competent in doing optimally challenging activities and in mastering

21   one's environment) and relatedness need (the need to have a sense of belonging and mutual

22   respect) (e.g., Li, Wang, Pyun, & Kee, 2013, p.327). The satisfaction of these needs plays a

23   crucial part in the process of maintaining autonomous forms of motivation in individuals.

24   Indeed, the distinction between autonomous forms of motivation (intrinsic motivation,

25   identified and integrated regulations), controlled regulations (introjected, external regulations)

1   and amotivation allows us to understand that the extent to which needs are satisfied will

2   determine the types of motivation endorsed by individuals and their effects on mental health

3   (Ryan & Deci, 2002). High levels of needs satisfaction would be positively related to

4   autonomous regulations, and negatively associated to controlled regulations and amotivation.

5   Moreover, SDT has shown that greater mental health was associated with needs satisfaction

6   and autonomous regulations (e.g., Ryan & Deci, 2002), and considers mental health as a state

7   of complete physical, mental and social well-being and not merely the absence of disease. For

8   these reasons two indexes such as quality of life and psychological distress will be taken into

9   account to measure mental health.

10   The Demand-Control-Support model (DCS, Karasek & Theorell, 1990) is one of the

11   most used models of stress in the workplace and indicated that individuals who were exposed

12   to high levels of psychological work demands and low work control and social support levels

13   were likely to be subjected to a lot of stress. In contrast, the work resources (e.g., work control

14   and social support), when they are high, can reduce psychological work demands and

15   contribute to the good mental health of individuals. SDT has shown some positive

16   relationships between work resources and psychological needs. Work control was positively

17   related to autonomy and competence needs, and social support was positively linked to

18   relatedness need (e.g., Van den Broeck, Vanteenkiste, De Witte, Soenens, & Lens, 2010) or to

19   relatedness and autonomy needs (e.g., Ryan & Solby, 1996).

20   A model was tested in which psychological needs act as mediators indirectly through

21   motivation of the relationship between psychological work demands, work resources (i.e.,

22   work control and social support) and mental health. It was predicted (1) a negative

23   relationship between psychological work demands and psychological needs satisfaction; (2) a

24   positive relationship between work resources and psychological needs satisfaction; (3) that

25   psychological needs satisfaction would be associated positively with autonomous motivation

1   and negatively with controlled regulations and amotivation ; and (4) that autonomous

2   motivation would be associated positively with quality of life and controlled regulations and

3   amotivation would be associated positively with psychological distress.

<div align="center">**Methods**</div>

Participants

6   214 French midwifery students (M_{age} = 22.8 years, age range: 19-41 years) were

7   recruited from three midwifery schools in the regions "Centre" and 'Pays de la Loire" to

8   participate in this study. Participants represented 68.6% of students of the three schools (n =

9   312). Table 1 shows the students' characteristics.

Measures

11   *Questionnaires*. Participants will be asked to complete several validated questionnaires

12   relating to (1) psychological needs satisfaction (three different questionnaires assessing

13   autonomy need satisfaction [5 items; Standage, Duda, & Ntoumanis, 2003); competence need

14   satisfaction (IMI; 5 items, Mc Auley, Duncan, & Tammen, 1989) and relatedness need

15   satisfaction (6 items, NRS-10; Richer & Vallerand, 1998)]; (2) behavioural regulations [24

16   items with six 4-item subscales representing the motivational regulations; Van Hoye,

17   Ramanoel, Heuze, & Sarrazin, 2010)] (3) mental health [26 items; the WHOQOL-Bref,

18   Leplege, Reveillere, Ecosse, Caria, & Riviere (2000) and the General Health Questionnaire-

19   12 items, Lesage, Martens-Resende, Deschamps,& Berjot (2011]; and (4) the Demand-

20   Control-Support model [DCS, 26-item with psychological work demands (9 items), decisional

21   latitude (9 items) and social support at work (8 items), Niedhammer, Chastaing, Gendrey, &

22   David (2006)]. Cronbach's alphas for psychological needs satisfaction range between .70 and

23   .87, for behavioural regulations they range between .67 and .95, for Whoquol-Bref and

24   psychological distress they are .85 and .84, and for DCS they range between .70 and .80,

25   respectively, showing acceptable internal consistency (Nunnally, 1978)

1 **Procedure**

2   Permission to conduct this study was granted by the University of Human Research

3 Ethics. Written informed consent was obtained from students. Participation was voluntary,

4 and students responded individually and anonymously to an online set of questionnaires

5 (approximately 35 minutes).

6 **Data analysis**

7   PLS-PM was used. To retain a reasonable number of manifest variables in the model,

8 the different constructs were measured by three or four aggregates of items (e.g., Little,

9 Cunningham, Shahar, & Widaman, 2002). See Table 3.

10 **Results**

11   Descriptive statistics and correlations for all study variables are shown in Table 2.

12   Results from the PLS-PM measurement model (outer model) provided evidence for

13 the reliability and validity of all the constructs. Loadings, ρ values, AVE values, and first and

14 second eigenvalues are reported in Table 3.

15   Results from the PLS-PM structural model (inner model) are presented in Figure 1.

16 **Discussion**

17   Results showed that work control and social support were positively related to the

18 three needs satisfaction. Individuals who are surrounded by resourceful work characteristics

19 would be more likely to experience a general feeling of psychological freedom (i.e.,

20 autonomy), interpersonal connectedness (i.e., relatedness), and effectiveness (i.e.,

21 competence). So, our findings highlight the importance of these factors for improving

22 psychological needs satisfaction. Contrary to our expectation, psychological work demands

23 were unrelated to the three needs satisfaction. This result suggests that the level of demands

24 has not functional significance in terms of needs satisfaction (Deci, Ryan, Gagne, Leone,

25 Usunov, & Kornazheva (2001).

1   Results also showed that only competence need satisfaction contributed positively and

2   significantly to the prediction of autonomous motivation and negatively and significantly to

3   controlled regulations and amotivation. Autonomous motivation was a significant positive

4   predictor of quality of life, and controlled regulations and amotivation were significant

5   positive predictors of psychological distress. The need for competence leads to the perception

6   of mastery, achievement and control, and allows individuals to efficiently adapt to complex

7   and changing environments (Van den Broeck et al., 2010). Findings highlight the link

8   between competence need satisfaction and motivational mechanisms leading to a good

9   perceived mental health (e.g., low psychological distress and high quality of life).

10   Some limitations of the present study should be considered. First, all measures were

11   self-reported. Caution with regard to over-interpretation should be considered. Second,

12   participants are in different levels of training and internships (1st through 4th year). Warr

13   (1990) suggested that for testing the relationships between work-related characteristics and

14   outcomes, it was important to include a large range of work increasing the variability in work-

15   related characteristics. Lastly, midwifery student volunteers are a geographically-select

16   sample, and expanding the study into a broader sample of midwifery students is required.

17   **Conclusion and implications for practice**

18   Our results underscore the positive predictive relationships of not only social support,

19   but also work control characteristics on needs satisfaction. If work resources are recognized as

20   stimulating personal growth, development and learning (Schaufeli & Bakker, 2004), our

21   findings highlight the importance in training of boosting psychological needs satisfaction to

22   improve the students' optimal functioning and work-related well-being. The findings also

23   provided evidence that competence need satisfaction though motivation played a crucial role

24   in the relationships between work resources and mental health. This suggests that participants

25   are very focused on skills acquisition to better prepare themselves for practice and gain

1   confidence (e.g., McIntosh, Fraser, Stephen, & Avis, 2012), are motivated, and it seems

2   possible because the work-related environment is perceived as sufficiently supportive. The

3   overall results suggest the importance of interpersonal relationships and the focal role of

4   clinical preceptor in training (Maxwell, Black, & Baillie, 2015). Feedback in general, and

5   debriefing after acute situations in particular, are important in enhancing their learning.

6   Midwifery schools should continue to develop appropriate strategies such as a personalized

7   follow up or the use of preceptorship programs (Licqurish & Seibold, 2008) to better

8   accompany the transition between the student status and that of professional.

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1   Table 1

2   *French midwifery Students' Characteristics*

	N	%
Less than 25 years	210	98
Female students	203	94.8
Distribution of participants in each midwifery school		
First school	85/120	70.8
Second school	72/98	73.5
Third school	57/94	60.6
Distribution by year of specialized training		
First year students	66	31
Second years students	47	22
Third years students	54	25
Four years students	47	22

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16   *NB:* In France, specialized training for four years of midwifery students begins after

17   examination at the end of the Common First Year of Health Studies – PACES

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1   Table 2

2   *Correlations, Means and Standard Deviations for All Study Variables*

		1	2	3	4	5	6	7	8	9	10	11
1.	Psychological work demands											
2.	work control	.01										
3.	Social support	-.26*	.35*									
4.	Relatedness need	-.19*	.33*	.59*								
5.	Autonomy need	-.15*	.46*	.57*	.74*							
6.	Competence need	.01	.34*	.29*	.61*	.57*						
7.	Autonomous motivation [a]	-.05	.35*	.36*	.35*	.36*	.31*					
8.	Controlled regulations [b]	.21*	-.09	-.18*	-.14*	-.15*	-.18*	-.38*				
9.	Amotivation	.10	-.20*	-.10	-.14*	-.16*	-.24*	-.57*	.68*			
10.	Quality of life	-.16*	.16*	.23*	.21*	.26*	.17*	.25*	-.24*	-.25*		
11.	Psychological Distress	.26*	-.04	-.15*	-.08	-.04	-.08	-.22*	.41*	.43	-.51*	
Mean		2.76	3.04	2.75	2.74	2.82	3.57	3.82	1.89	1.41	3.72	1.23
Standard deviation		.42	.40	.47	.75	.70	.63	.71	.84	.90	.44	.48
Skewness		.18	-.45*	-.19	.03	.28	-.12	-.97*	1.02*	2.64*	-.63*	.51*
Kurtosis		-.22	-.14	.46*	.09	-.05	-.03	1.09*	.50	6.55*	.89*	.03

4   * $p < .05$;
5   [a] Autonomous motivation represented the mean of intrinsic motivation, integrated regulation
6   and identified regulation;
7   [b] Controlled regulations represented the mean of introjected regulation and external
8   regulation.

1 Table 3

2 *Composite Reliability Values, Average Variance Extracted and Eigenvalue-Analysis of Latent*
3 *Variables and Standardized Factor Loadings for the Measurement Model*
4

Manifest variables	Latent variables	Standardized factor loadings	Composite Reliability Values	Average Variance Extracted	First eigenvalue of the item correlation matrix	Second eigenvalue of the item correlation matrix
Parcel 1 Self-determined motivation [a]	Self-determined motivation [a]	.82 ***	.92	.73	2.93	.43
Parcel 2 Self-determined motivation [a]		.80 ***				
Parcel 3 Self-determined motivation [a]		.91 ***				
Parcel 4 Self-determined motivation [a]		.88 ***				
Parcel 1 Controlled motivation [b]	Controlled motivation [b]	.89 ***	.92	.73	2.92	.55
Parcel 2 Controlled motivation [b]		.77 ***				
Parcel 3 Controlled motivation [b]		.83 ***				
Parcel 4 Controlled motivation [b]		.92 ***				
Parcel 1 Amotivation	Amotivation	.94 ***	.97	.88	3.50	.24
Parcel 2 Amotivation		.95 ***				
Parcel 3 Amotivation		.90 ***				
Parcel 4 Amotivation		.95 ***				
Parcel 1 Quality of life	Quality of life	.87 ***	.92	.70	2.81	.44
Parcel 2 Quality of life		.86 ***				
Parcel 3 Quality of life		.83 ***				
Parcel 4 Quality of life		.80 ***				
Parcel 1 Psychological work demands	Psychological work demands	.70 ***	.84	.62	1.91	.66
Parcel 2 Psychological work demands		.79 ***				
Parcel 3 Psychological work demands		.86 ***				
Parcel 1 Work control	Work control	.84 ***	.85	.65	1.94	.66
Parcel 2 Work control		.87 ***				
Parcel 3 Work control		.69 ***				
Parcel 1 Social support	Social support	.75 ***	.85	.65	1.98	.61
Parcel 2 Social support		.86 ***				
Parcel 3 Social support		.80 ***				
Parcel 1 Basic need satisfaction for auto	Basic need satisfaction for auto	.79 ***	.85	.66	1.98	.59
Parcel 2 Basic need satisfaction for autonomy		.82 ***				
Parcel 3 Basic need satisfaction for autonomy		.83 ***				
Parcel 1 Basic need satisfaction for com	Basic need satisfaction for comp	.81 ***	.85	.64	1.94	.62
Parcel 2 Basic need satisfaction for competence		.81 ***				
Parcel 3 Basic need satisfaction for competence		.78 ***				
Parcel 1 Basic need satisfaction for rela	Basic need satisfaction for relat	.92 ***	.93	.82	2.46	.32
Parcel 2 Basic need satisfaction for relatedness		.88 ***				
Parcel 3 Basic need satisfaction for relatedness		.92 ***				
Parcel 1 Psychological distress	Psychological distress	.78 ***	.91	.70	2.82	.47
Parcel 2 Psychological distress		.88 ***				
Parcel 3 Psychological distress		.84 ***				
Parcel 4 Psychological distress		.86 ***				

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7 [a] Self-determined motivation represented the mean of intrinsic motivation, integrated
8 regulation and identified regulation;
9 [b] Controlled motivation represented the mean of introjected regulation and external
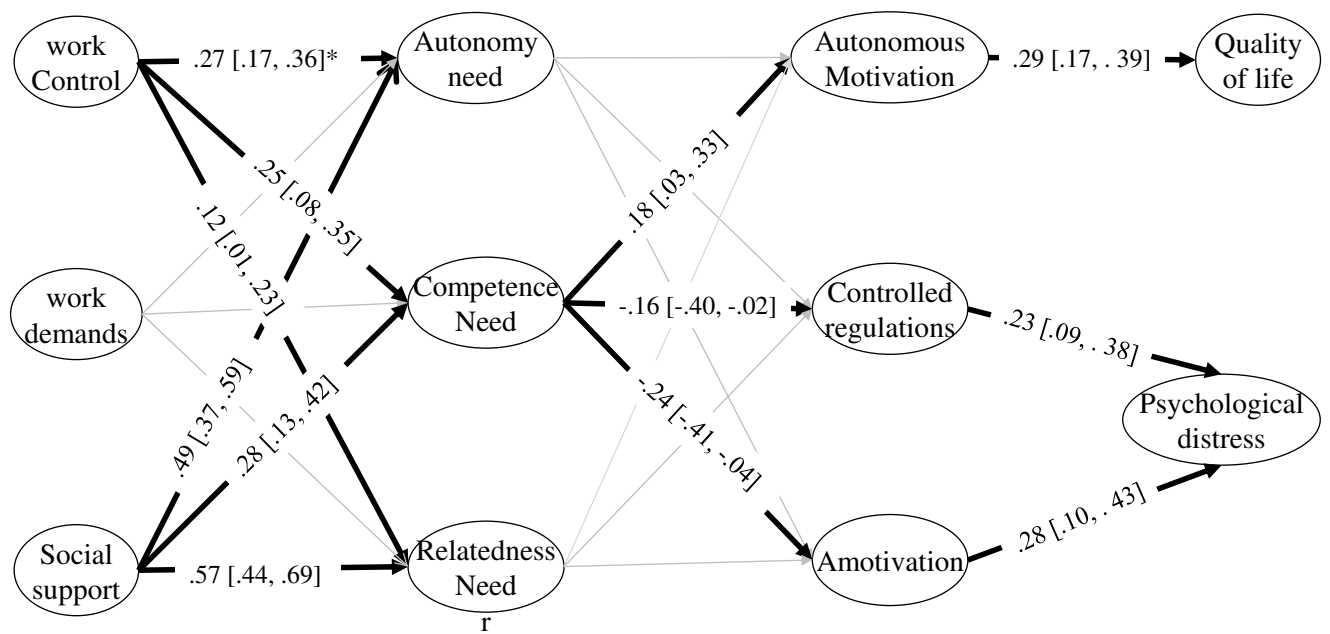10 regulation;
11 *** $p < .001$

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Figure 1: *Final Model*