



## What Stimulates Proactive Behaviour of Midwifery Students during their Education?

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**Received:** 19 December 2018; **Accepted:** 4 January 2019; **Published:** 12 January, 2019

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### Abstract

**Background:** Proactive behaviour, triggered by various individual and/or contextual antecedents, could be a significant added value to cope with the major challenges midwifery students face in adapting quickly and effectively to different clinical settings.

**Aim:** Assessing the presence of various individual and contextual antecedents in a group of midwifery students and explore their association with proactive behaviour which could bring benefits to the constantly evolving field of reproductive healthcare.

**Methods:** A cross-sectional study was conducted to investigate associated antecedents of proactive behaviour in a group of midwifery students (n = 421) between December 2017 and February 2018.

**Findings:** More than half (66.8%) of the midwifery students demonstrated some kind of proactive behaviour. Albeit, 13.6% of the proactive behaviour was associated to the appearance of the investigated individual and/or contextual antecedents. The Dutch nationality, the evolution in the educational programme, a high role breadth self-efficacy, generalized compliance, trust in peers and autonomy were all positively associated to proactive behaviour.

**Conclusions:** Midwifery students showing generalized compliance to the organization, have a high role breadth self-efficacy and trust in their peers are positively associated to proactive behaviour.

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**Discussion:** Anticipating the various significant antecedents during the midwifery education, could strengthen the level of proactive behaviour of future midwives. The awareness of for proactive behaviour could have a positive contribution to the work efficiency and coping attitude of future midwives. This will indirectly contribute to the quality of care for mother and child.

**Keywords:** Proactive Behaviour; Midwifery Students; Resilience; Role Breadth Self-Efficacy; Proactive Idea Implementation

## Highlights

- Proactive midwifery students are decisive for organizational success
- Midwifery students with a high role breadth self-efficacy likely behave proactively
- Dutch students are positively associated with showing proactive behaviour
- Trust in peers in health education is positively associated with proactive behaviour

## Introduction

Reproductive health care is in a continuous state of change. An increase in comorbidity of pregnant women, greater attention to the quality of care, a shift from inpatient to outpatient care and complexity in care for pregnant women and their families rises [1]. Midwives and midwifery students nowadays, have to deal with clinical, professional and political stressors on a daily basis [2]. In recent studies, proactive behaviour of the midwife is pushed forward to anticipate this changing health care and keep knowledge and skills up-to-date [3-6]. A proactive midwife works autonomously, adjusts easily, is always one step ahead and constantly focuses on improving quality [6]. In addition, proactive behaviour promotes resilience and a coping attitude towards stress, causes a higher job satisfaction and contributes towards a successful organization [7,8]. Proactive behaviour can be influenced by several individual and/or contextual antecedents [9].

To promote proactive behaviour as early as possible, this study focuses on student midwives during their educational program. Midwifery students must be prepared to function as safe, competent, innovative and intuitive care providers in an environment where new information and clinical situations are constantly changing [10]. In an earlier pilot study by Mestdagh et al [11], conducted at one University College in Flanders, possible

associations between individual and contextual antecedents and the likelihood to observe proactive behaviour in midwifery students were studied. This study revealed that midwifery students with a high role breadth self-efficacy and low control appraisal, more likely show proactive behaviour. The aim of this study is to re-plot and validate the former pilot study and to confirm or look for more possible associations between the individual- and contextual antecedents and the occurrence of proactive behaviour within a larger sample of Flemish midwifery students.

## Methods

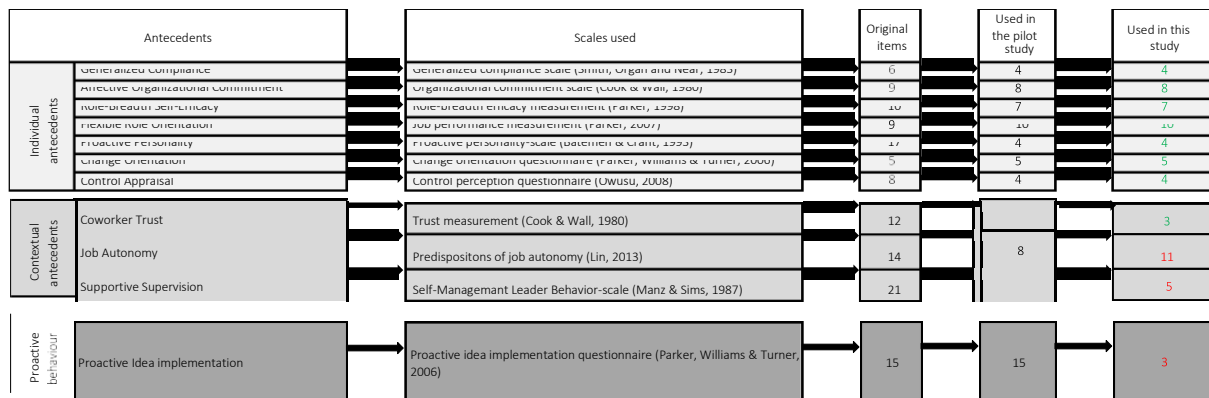
### Study Design

During the 2017-2018 academic year, all midwifery students (n = 2128) registered at one of the nine Flemish midwifery University Colleges, were asked to participate in this Cross-sectional study. A recent pilot study of Mestdagh et al [11] developed and tested a 75-item questionnaire in a group of 156 midwifery students exploring the origin and interrelationships between identifiable antecedents and their association with proactive behaviour. The questionnaire is subdivided in four categories all possibly linked to proactive behaviour. First, a set of six personal and demographical questions are asked. The second category consists of seven individual antecedents: (1) generalized compliance, (2) affective organizational commitment, (3) proactive personality, (4) change orientation, (5)

control appraisal, (6) role breadth self-efficacy and (7) flexible role orientation. Third, three contextual antecedents: (1) job autonomy, (2) confidence in the possibilities of fellow students and (3) supportive supervision. And finally, the level of proactive behaviour is assessed using the concept of 'proactive idea implementation' constructed from five components: 1) creating costs and/or 2) time savings, 3) improving quality, 4) achieving improved results and 5)

cooperating more efficiently. Midwifery students were asked how many new ideas they had with concerning these components within the current program, whether they had shared their idea(s) with others, and whether these idea(s) were implemented by anyone (themselves or others). The full development of this questionnaire is elaborated in the study of Mestdagh et al [11], in summary; an overview is given in Figure 1.

**Figure (1):** Schematic overview of the questionnaire



### Study Participants

All 2128 midwifery students, registered in the midwifery program in 2017-2018, were asked to fulfill the online questionnaire. A total of 421 students (19.8%) completed the online questionnaire. The student's characteristics are presented in Table 1. The sample consisted of 421 midwifery students with a mean age of 21.3 years. All students, except two, were female. The majority (79.6%) of the students had the Belgian nationality while 19.5% were Dutch. More than one third (n = 164; 39%) of the studied population was in their first year of the midwifery program. Of the nine participating University Colleges, there was a clear predominance of three (1, 6 and 8).

### Ethical considerations

The application was submitted and approved (SHW\_17\_48\_02) by the Ethics Advisory Committee for Social and Human Sciences at the University of Antwerp. Furthermore, an informed consent, with information about the aim and design of the

study, was given to the students. All students (n = 421) gave their digital consent. They were referred to the confidential aspect of their participation. Anonymity and confidentiality of the participating University Colleges and the students was guaranteed by coding the questionnaires.

### Data collection and analysis

Questionnaires were completed digitally by each participant and processed anonymously to the research team. The average questionnaire duration was 13 minutes. At the end of the questionnaire a blank space was left for general comments. Student's responses were coded numerically. Questions with multiple answer possibilities were coded as 5 for always/totally agree, 4 for often/agree, 3 for sometimes/neutral, 2 for rare/disagree and 1 for never/totally disagree. Data was imported into the statistical program SPSS version 23.0©. Summed scores were used per antecedent and per student in this analysis. The level of proactive behaviour was subdivided into four categories.

First there were students with no ideas (group 1), second, students had one or more ideas, but did not discuss this with anyone nor implemented it (group 2). Third, students had one or more ideas, discussed it but not implement (group 3). Finally, group 4 represented students who had one or more ideas, discussed and implemented them. According to Parker et al. [12] taking the lead to improve either by discussing it with someone or by executing it is a minimal prerequisite for proactive behaviour, both group 3 and 4 represent students are performing proactive behaviour.

**Table (1):** Student's personal characteristics

Personal characteristics		n	%
Age	17-18	14	3.3
	19-20	230	54.6
	21-22	89	21.1
	≥23	88	20.9
Number of years in the education	1	168	39.9
	2	109	25.9
	3	106	25.2
	4	29	6.9
	>4	9	2.1
Ethnicity	Belgian	335	79.6
	Dutch	82	19.5
	Others	4	1
Gender	Female	419	99.5
	Male	2	0.5
University College	1	87	20.7
	2	14	3.3
	3	36	8.6
	4	15	3.6
	5	34	8.1
	6	70	16.6
	7	16	3.8
	8	139	33
	9	10	2.4

First, a descriptive univariate analysis was performed followed by the bivariate

analysis in which significant relationships were detected. In addition, both univariate and multiple logistic regressions were used. Univariate logistic regressions were used to look for possible associations between proactive behaviour of midwifery students and the various demographical, individual and contextual antecedents. Furthermore, a multiple logistic regression was performed with 'proactive behaviour' as a dependent predictable variable. By including the mutual influence of the variables on each other in the analysis, this test could be used to determine the influence of each of the demographical, individual and contextual antecedents on the development of proactive behaviour by midwifery students. To examine whether there were no inter-correlations between all variables, a test for multi-collinearity was done. Because there were no tolerances lower than 0.1, all variables could remain in the model [13].

### Findings

A total of 36 students (8.7%, group 1) did not have any new ideas regarding the proposed components during their midwifery training. A group of 102 students (24.5%, group 2) had at least one new idea, but had not discussed it, nor implemented it. Other 110 students (26.4%, group 3) had at least one new idea discussed with someone but without implementing it. Finally, 168 students (40.4%, group 4) had at least one new idea which they discussed with someone during their midwifery training and implemented the idea. More than half of the respondents (66.8%, group 3+4) were more or less proactive. In the bivariate analyses of the demographical, individual and contextual antecedents with proactive behaviour, as shown in Table 2, group 1 and 2 are presented as NOT proactive on the left side, and group 3 and 4 as proactive on the right side. Proactive students scored significantly higher ( $p < 0.05$ ) compared to non-proactive students on the following antecedents: generalized compliance, role breadth self-efficacy, trust in peers, job autonomy, age and number of years in education. A Chi-square test, used to assess the influence of personal characteristics on whether or not proactive

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behaviour was present among students, showed that significantly more Dutch students significantly ( $p = 0.012$ ) exhibited proactive behaviour compared to Belgian

students. However, no significant relationship was established in the occurrence of proactive behaviour between the different University Colleges.

**Table (2):** Bivariate analysis of the personal characteristics, individual and contextual antecedents with proactive behaviour

	Proactive behaviour				p
	NO		YES		
	n	%	n	%	
<b>Nationality (N = 412)</b>					<b>0.012*†</b>
Belgian	119	36	212	64	
Dutch	17	21	64	79	
<b>Number of years in the educational program (N = 416)</b>					0.053
	1	73	43.5	95	56.5
	2	36	33	73	67
	3	29	27.4	77	72.6
	4	9	31	20	69
	>4	1	11.1	8	88.9
<b>University College (N = 416)</b>					0.333
1	24	28.2	61	71.8	
2	4	28.6	10	71.4	
3	14	40	21	60	
4	6	40	9	60	
5	5	20.8	19	79.2	
6	4	40	6	60	
7	38	50	38	50	
8	24	26.7	66	73.3	
9	25	32.2	48	65.8	
	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>p</b>
<b>Personal characteristics</b>					
Age	20.85	3.8	21.55	4.91	<b>0.013*</b>
Number of years in the education	1.93	1.14	2.25	1.22	<b>0.002**</b>
<b>Individual antecedents</b>					
Generalized compliance	14.62	2.41	15.21	1.81	<b>0.018*</b>
Affective organizational commitment	31.26	4.64	31.42	4.21	0.893
Role breadth self-efficacy	21.8	4.47	24	4.25	<b>&lt;0.001**</b>
Proactive personality	14.3	2.09	14.41	2.03	0.621
Change orientation	18.39	2.52	18.8	2.42	0.057
Control appraisal	12.49	2.48	12.81	2.35	0.111
Flexible role orientation	28.25	1.86	28.08	1.96	0.315
<b>Contextual antecedents</b>					
Job Autonomy	37.88	4.6	39.33	4.51	<b>0.013*</b>
Supportive supervision	17.74	3.53	18.36	2.99	0.17
Coworker trust	9.79	2.26	10.48	1.97	<b>0.006**</b>
† : Fischer exact test ; * $p < 0,05$ ; ** $p < 0,01$					

In the univariate logistic regression analysis, a significant positive association was found between proactive behaviour and the following antecedents: generalized compliance (OR = 1.148) role breadth self-efficacy (OR = 1.124) trust in peers (OR = 1.174), job autonomy (OR = 1.074), number of years the educational program

(OR = 1,300) and Dutch nationality (OR = 2,113). Table 3 shows that no significant association was established between proactive behaviour and the independent antecedents: age, organizational commitment, supportive supervision, proactive personality, change orientation, degree of control and flexible role orientation.

**Table (3):** Univariate and multiple logistic regression analysis with dependent variable "proactive behaviour"

	UNIVARIATE			MULTIPLE		
	OR	95% CI	p	OR	95% CI	p
<b>Personal characteristics</b>						
Age	1,040	[0,985 - 1,098]	0,155			
Nationality† BE	ref	-	-	-	-	-
NL	2,113	[1,183 - 3,774]	0,011*			
Number of years in the education	1,300	[1,073 - 1,574]	0,007**	1,368	[1,118 - 1,673]	0,002*
<b>Individual antecedents</b>						
Generalized compliance	1,148	[1,039 - 1,269]	0,007**	1,121	[1,008 - 1,247]	0,035*
Affective organizational commitment	1,009	[0,963 - 1,057]	0,718			
Role breadth self-efficacy	1,124	[1,070 - 1,182]	< 0,001**	1,108	[1,052 - 1,168]	< 0,001*
Supportive supervision	1,062	[0,997 - 1,132]	0,063			
Proactive personality	1,027	[0,929 - 1,135]	0,608			
Change orientation	1,071	[0,985 - 1,164]	0,109			
Control appraisal	1,058	[0,971 - 1,152]	0,199			
<b>Contextual antecedents</b>						
Coworker trust	1,174	[1,062 - 1,297]	0,002**	1,149	[1,031 - 1,280]	0,012*
Job Autonomy	1,074	[1,025 - 1,126]	0,003**	-	-	-
Flexibel role orientation	0,954	[0,857 - 1,061]	0,385			
* p<0,05; ** p<0,01; † BE = Belgian en NL = Dutch Nagelkerke R2 model = 0,136; Significance model p<0,001; Hosmer en Lemeshow test = 0,618						

Next a multiple logistic regression was performed to disentangle the effect of the different significant variables on proactive behaviour. The statistically significant (p<0.001) model shows that 13.6% of the variance in proactive behaviour is positively influenced by the number of years in the educational program, generalized compliance, role breadth self-efficacy and trust in peers. The greatest predictor in this model is the number of years in the

educational program (OR = 1.368). A student in his/her second year in the midwifery program, has 36.8% more chance to exhibit proactive behaviour compared to a first year student.

## Discussion

This study wanted to re-plot and validate the former pilot study of Mestdagh et al. [11] and confirm or look for more

possible associations between the demographical, individual- and contextual antecedents and proactive behaviour, shown as 'idea implementation', within a larger sample of Flemish midwifery students. The majority (66.8%) of the Flemish midwifery students showed some form of proactive behaviour, albeit 13.6% can be explained by the presence of certain demographical, individual and/or contextual antecedents. First, the demographical antecedent 'Dutch nationality' was positively associated with proactive behaviour. This confirms the finding of Mestdagh et al. [14] stating that Dutch students are more likely to show proactive behaviour in relation to Belgian students. Second, the number of years in the midwifery program is also significantly related to proactive behaviour. This might be explained by the fact that students who are longer in the educational program feel more familiar with the environment, with fellow students and/or teachers.

However, this was a cross-sectional study design, so we've measured at one point of time. To validate the effect of number of years, a cohort study is required. In one of the participating University Colleges, a new midwifery program was installed in this academic year, to stimulate proactive behaviour. A pre-test post-test cohort study was set up in a study protocol called 'PROMISE' [15]. This cohort will be followed until September 2022. Concerning the individual antecedents, both generalized compliance and role breadth self-efficacy, were found to be influential on the proactive behaviour of midwifery students, which is in line with previous study results [11, 16-18].

The positive influence of the contextual antecedent's job autonomy and trust in peers, stated by Crant [19] and Sonnentag & Spychala [20] are also confirmed in this study. Even Jordan & Farley [21] linked the importance of role modeling to the development of confidence, defined as self-efficacy. In contrary to Wu et al. [22] and Parker et al. [18] that pushes 'proactive personality' forward as a key factor to proactive behaviour, this study

showed no significant association between proactive midwifery students and proactive personality. Also the findings of Bailey et al. [23], stating that supportive supervision could increase satisfaction and motivation, and therefore the tendency of showing proactive behaviour, are not confirmed by this study.

### Study limitations

A first limitation of this study is the use of a cross-sectional design, whereby midwifery students were observed at a specific situation at one time, so changes and trends over time were not taken into account. The longitudinal study, as described in 'PROMISE' could provide a better picture whereby one group of student will be followed at different time points for several years [15]. A second shortcoming, after repeatedly reminding and encouraging in completing the questionnaires, was the low response rate of some University Colleges. This makes it impossible to determine whether proactive behaviour of midwifery students differs between the different schools. An important point of attention is the internal reliability tests, scored by Cronbach's alpha. This could get a higher score for five of the antecedents: generalized compliance ( $\alpha = 0.53$ ), proactive personality ( $\alpha = 0.56$ ), change orientation ( $\alpha = 0.57$ ), control appraisal ( $\alpha = 0.59$ ) and flexible role orientation ( $\alpha = 0.34$ ). The biggest concern was the antecedent 'flexible role orientation'.

This also occurred in our previous pilot study, where four of the ten questions regarding this antecedent were reformulated [11]. In this study, when deleting three of the earlier reformulated questions, the Cronbach's alpha could rise till 0.66. It seems this concept remains hard to understand for midwifery students or it might be suspected that some questions were filled in randomly. When using self-administered questionnaires, it is advisable, in future completion, to organize more clarification and guidance by supervisors [24]. Finally, the fact that almost 86% of the proactive behaviour could not get linked to

the appearance of the antecedents indicates that there may still be factors that were not yet captured. Two qualitative studies were already performed in our search for stimulating and/or hindering factors of proactive behaviour in midwifery at their workplace [14]. A plausible addition for this research would be a qualitative examination of proactive behaviour in midwifery education.

### **Practical implications and recommendations**

To promote proactive behaviour during the midwifery educational programme, some recommendations stem directly from the results of this study. University Colleges must be aware that individual and/or contextual factors, such as job autonomy, are contributory to proactive behaviour. By increasing the autonomy of students, their proactive behaviour can be positively influenced [9]. Students, who experience more autonomy, will take more initiative to acquire new skills and increase their sense of responsibility for problem solving [25]. Also the influence of the trust in peers on proactive behaviour is a clearly applicable component in an educational programme, e.g. by working around group dynamics. Individuals, who learn to deal with others, are less worried about themselves in social relationships and are more motivated to behave proactively [26]. Also, since the degree of role breadth self-efficacy in midwifery students is positively associated with proactive behaviour, it is advisable to encourage this wherever possible during the course. Hereby, students can be motivated by giving them more confidence in their own capabilities to carry out tasks independently [12]. Also, Back et al. [27] linked high levels of self-confidence at the time of graduation to competent and skilled midwives in the future. In addition, supporting students in overcoming difficulties helps them to gain confidence which can result in a stronger role breadth self-efficacy [26].

A general and very important condition during the educational

programme, is the creation of a safe and open atmosphere in which students emphasize the importance of proactive behaviour and are motivated and encouraged in behaving proactively [11,28]. McGowan & Murray [29] described a weak evidence of association between resilience and slightly improved academic performance as well as decreased reports on burnout. However, no study specifically considered student midwives. Also, Williams [30] elaborated the importance of building and developing resilience through positive and negative encounters on the midwifery programme. And Ertekin et al. [31] linked high psychological resilience and self-confidence levels to increasing problem-solving skills. This study aims to increase resilience by supporting proactive behaviour in midwifery education.

### **Conclusions**

According to this study, more than half (66.8%) of the midwifery students, studying at one of the nine Flemish University Colleges, demonstrated some kind of proactive behaviour. Merely, Dutch students and students who are already further evolved in to the educational programme, are positively associated with showing proactive behaviour. Furthermore, midwifery students who have high role breadth self-efficacy, generalized compliance trust in peers and experience autonomy also showed a significant positive association with proactive behaviour. Future research should focus on methods in encouraging midwifery students in those positively associated antecedents in order to show proactive behaviour. In addition, further investigation on the influence of the Dutch nationality is recommended.

### **Acknowledgements**

Eveline Mestdagh wishes to thank all midwifery students and lecturers who stimulated the students for their interesting contribution.



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