Trainee Experience in Relation to Voice Handicap, General Coping and Psychosomatic Well-Being in Female Student Teachers: A Descriptive Study

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Key Words

Student teachers · Trainee experience · Voice handicap · Psychosomatic well-being · Coping

Abstract

Objective: The aim of this study was to investigate the relation between trainee experience and voice handicap, general coping and psychosomatic well-being in student teachers. **Methods:** A longitudinal survey was performed among 43 starting female student teachers, becoming a professional teacher in primary education. The subjective biopsychosocial consequences of voice problems was assessed by the Voice Handicap Index inventory, the general coping style by the Utrecht Coping List and psychosomatic well-being by the Symptom Checklist. **Results:** Student teachers in general and especially with a higher impact of the voice after two trainee periods showed a more reactive-defensive coping style. Student teachers with a higher impact of the voice after two trainee periods had less psychosomatic well-being. **Conclusion:** These findings may call for a different attitude of the (university) speech therapist. They should take into account that together with changing the voice handicap, factors of psychosomatic well-being can play an important role in coaching student teachers. Speech therapists should also be encouraged to change the student's passive coping behaviour into a more active method and to stimulate the student to implement a new coping attitude into new trainee activities.

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Introduction

Vocal overload in teaching may lead to problems, such as dysphonia, voice fatigue, discomfort in the throat and diminished voice capacity, which can be a risk for the continuity of the profession [1–4]. De Jong et al. [5] observed that more than 12% of the teachers had experienced voice problems during training and that this group reported significantly more voice complaints and absence from work due to voice complaints than their colleagues without voice problems during education. Therefore, voice problems during the training period can be seen as a risk factor for getting voice problems during the career. Students in general reported frequently occurring vocal symptoms, whereas student teachers reported a greater number of frequent vocal symptoms than other students at the university [6]. Various studies showed that about one third of student teachers suffered from voice difficulties during practising teaching [7, 8]. Female student teachers reported more voice problems, compared to females in the general population [5]. Simberg et al. [6, 9] found that around 20% of the population of student teachers reported two or more vocal symptoms during the previous year and 19% had an organic voice disorder. Student teachers reporting voice complaints showed more frequently that physical, environmental and psychological factors had a negative influence on their voice [10]. The most common coping strategies of student teachers in the last year of the university were 'hydration',

'speak softly' and 'use of amplifiers', which was not different from practising teachers [11].

The occurrence of vocal symptoms and voice disorders in professions where the voice is an essential tool can cause stress and anxiety [12, 13]. Stress is part of a vocal profession and is reflected in several acoustic parameters such as pitch and intensity [12, 14, 15]. Compared to teachers, student teachers were less convinced that stress and work pressure are risk factors for developing voice problems and they tended to underestimate the vocal demands of the future teaching profession [11, 16]. Thomas et al. [13] demonstrated a tendency for psycho-emotional factors to be more influential in teachers early in their career. Sapir et al. [17] described that student singers were worried, depressed or anxious because of their voice problems. Smith et al. [18] found that reported stress was the highest in teachers. Murray-Harvey et al. [19] reported that at least half the students experienced stress at least some of the time in their practicum.

In a Belgian study, Exelmans et al. [20] demonstrated that teachers and nonteachers with a high Voice Handicap Index (VHI) score (>75th percentile) had higher scores on the Utrecht Coping List (UCL) subscale 'passive reaction pattern' and lower scores on the UCL subscale 'active confrontation or dealing with the problem'. Student teachers, at the start of the vocational education, were supposed to be relatively unaware of how to cope with their vocal capacities [21].

The aim of this study was to investigate the relation between trainee periods and voice handicap, the general coping style and psychosomatic well-being in starting student teachers. This study is part of a larger study on the cause and consequences of voice problems in student teachers, at the Vocational University of Arnhem and Nijmegen.

Materials and Methods

Subjects

A longitudinal survey was performed among student teachers before and after two trainee periods in the first year of education at the Vocational University. All 203 starting students (160 females and 43 males) at the Vocational University of Arnhem and Nijmegen (2007–2008) mandatorily filled in the questionnaires. The questionnaires were individually returned with a response rate of 99%. At the end of the first year, after two trainee periods, 140 students were randomly selected and were asked to fill in the questionnaire voluntarily. The response rate was 42% (45 female and 13 male students, 1 anonymous). For this longitudinal study, only female students were selected as previous research showed that voice problems in teachers are more common in women than

in men [1, 5, 22, 23]. A total of 43 questionnaires could be analyzed. The mean age of the subjects was 18.6 years (range 17–23) at the start of the study.

The Trainee Period

A trainee period in the first year of education at the Vocational University of Arnhem and Nijmegen has a duration of 25 days, with a frequency of 2 days per week. There were 2 trainee periods (starting in October and March, respectively) with an interval of 3 months. The student had to perform daily activities and give lessons, that were monitored and judged by a professional teacher. The professional teacher was always present and also paid attention to the pupils' behaviour. The aim of these trainee periods was to assess the student's social, didactic and pedagogic skills at the starting level.

Questionnaires

The VHI, UCL and the Symptom Checklist (SCL-90) were used. The VHI has proved to be an adequate instrument for rating the subjective biopsychosocial consequences of voice problems [24, 25]. The Dutch version of the VHI was used [26], which consists of 30 questions in total regarding emotional, physical and functional domains, ordered into subscales of 10 questions each. The questions were rated on a 5-point scale: never (0), almost never (1), sometimes (2), nearly always (3) and always (4). Consequently, the total scores of the VHI are between 0 and 120. Where the VHI is mentioned in the pertinent study, it is a reflection of the VHI total scores.

The general coping style was assessed by the UCL, which consists of 47 questions, and the responses are rated on a 4-point ordinal scale. The possible answers are: seldom or never (1), sometimes (2), often (3) and very often (4). The UCL consists of subscales along 7 categories: 'active confrontation or dealing with the problem' (7 items), 'avoidance/waiting' (8 items), 'passive reaction pattern' (7 items), 'reassuring thoughts' (5 items), 'palliative reactions' (8 items), 'emotional expression' (3 items) and 'seeking for social support' (6 items). Three items were not included in 1 of the 7 categories [27].

The SCL-90 assesses psychosomatic well-being within 9 domains: 'anxiety' (10 items), 'agoraphobic anxiety' (7 items), 'depression' (16 items), 'somatic complaints' (12 items), 'insufficiency in thinking and acting' (9 items), 'interpersonal sensitivity and mistrust' (18 items), 'hostility' (6 items) and 'sleeping problems' (3 items) [28, 29]. The remaining items are not arranged in 1 of these subscales and are therefore collectively termed 'miscellaneous items' (9 items). The subject indicates whether an item fits to his person on a 5-point scale: not at all (0), a little bit (1), moderately (2), quite a bit (3) and extremely (4).

Statistical Analysis

The data were analyzed using the statistical program SPSS 16.0. One-sample, 2-tailed Kolmogorov-Smirnov tests were applied in order to determine if continuous outcome variables were normally distributed. For continuous outcome variables that were not normally distributed, Mann-Whitney U tests were used. The significance level was set at $p \leq 0.05$. For discrete outcome variables, the χ^2 test was used. Odds ratios were used to quantify the dependency in 2×2 tables. The odds ratio shows how many times a group was more likely to have a particular outcome in comparison to another group and therefore reflects the relative

Fig. 1. Difference (in percentages) of VHI total, UCL and SCL scores before (B) and after (A) two trainee periods: A – B = difference. VHItot = VHI total; ACT = active confrontation or dealing with the problem; PAL = palliative reactions; AV-W = avoidance/waiting; SOC = seeking for social support; PAS = passive reaction pattern; EXP = emotional expression; REAS = reassuring thoughts;

ANX = anxiety; AGO = agoraphobic anxiety; DEP = depression; SOM = somatic complaints; IN = insufficiency in thinking and acting; SEN = interpersonal sensitivity and mistrust; HOS = hostility; SLE = sleeping problems; MISC = miscellaneous items; SCLtot = total SCL score.

risk. A relative risk of 50% or more was considered to be meaningful. This was in accordance with an odds ratio greater than 1.5 or less than 0.66.

Results

Comparison of the VHI, UCL and SCL-90 Scores before and after Two Trainee Periods

In order to obtain information on how the scores of the VHI, UCL and SCL-90 have changed after the trainee periods, the scores were arbitrarily divided into three categories: lower, the same or nearly the same, and higher. A score between 0.95 and 1.05 was arbitrarily considered as 'the same or nearly the same' as an increase or decrease of 5% was not to be considered as meaningful. Additionally, the ratio higher:lower scores (i.e. the percent difference = after divided by before the trainee periods) was calculated.

Voice Handicap. How the VHI total scores have changed after the trainee periods is shown in figure 1. The percentage of higher scores divided by the percentage of lower scores indicates the relative change (table 1). Of

the total change, a higher VHI total change comprises 39%.

Coping Behaviour. In figure 1, the pattern of change of the coping scores (UCL) after the trainee periods is shown. The percentage of higher scores divided by the percentage of lower scores indicates the relative change (table 1). Only on the subscale 'passive reaction pattern' was the score higher after the trainee periods. The scores of the other subscales were slightly to remarkably lower.

Psychosomatic Well-Being. In figure 1, the pattern of change of psychosomatic well-being (SCL-90) after the trainee periods is shown. The percentage of higher scores divided by the percentage of lower scores indicates the relative change (table 1). The scores of sleeping problems remained unaltered, while the scores of the SCL-90 total and other subscales were lower.

Comparison between Students with Higher versus Equal or Lower VHI Total Scores after Two Trainee Periods

In order to compare the students with higher versus equal or lower VHI total scores after two trainee periods,

Table 1. Percent difference between the higher and lower scores from figure 1 (high scores divided by low scores = balance) of the VHI, UCL and SCL-90

VHI	
VHI _{tot}	0.39
UCL	
ACT	0.33
PAL	0.94
AV-W	0.42
SOC	0.90
PAS	1.20
EXP	0.82
REAS	0.61
SCL-90	
ANX	0.17
AGO	0.13
DEP	0.30
SOM	0.35
IN	0.48
SEN	0.35
HOS	0.60
SLE	1.00
MISC	0.18
SCL _{tot}	0.08

VHI_{tot} = VHI total; ACT = active confrontation or dealing with the problem; PAL = palliative reactions; AV-W = avoidance/waiting; SOC = seeking for social support; PAS = passive reaction pattern; EXP = emotional expression; REAS = reassuring thoughts; ANX = anxiety; AGO = agoraphobic anxiety; DEP = depression; SOM = somatic complaints; IN = insufficiency in thinking and acting; SEN = interpersonal sensitivity and mistrust; HOS = hostility; SLE = sleeping problems; MISC = miscellaneous items; SCL_{tot} = total SCL score.

the difference between the scores of the VHI, UCL and SCL-90 before (B) and after (A) the trainee periods (difference = A – B) was dichotomized into ≤ 0 , or > 0 . This means that a score difference > 0 indicates that the score after two trainee periods is higher than before the two trainee periods, and vice versa.

Coping Behaviour. Table 2 shows the difference between the VHI total scores before and after two trainee periods related to the difference between the UCL subscale scores before and after the trainee periods (n = 43). Of the students with higher VHI scores after the trainee periods, 70% also showed a higher score on the ‘passive reaction pattern’ subscale. This is a significant result (p = 0.039) and is also reflected by an odds ratio of 4.6. The odds ratios indicate that students with a higher VHI total score had a higher relative risk of a higher score on the

Table 2. Difference between the VHI total scores before and after the trainee periods related to the UCL subscale scores (difference = after minus before) (n = 43)

UCL	VHI		p (Pearson χ^2)	Odds ratio
	low	high		
PAL				
lower	20 (76.9)	6 (60)	0.973	1.0
higher	13 (23.1)	4 (40)		
ACT				
lower	26 (78.8)	8 (80)	0.934	0.9
higher	7 (21.2)	2 (20)		
AV-W				
lower	25 (75.8)	8 (80)	0.077	0.7
higher	8 (24.2)	2 (20)		
SOC				
lower	20 (76.9)	5 (50)	0.551	1.5
higher	13 (23.1)	5 (50)		
PAS				
lower	22 (66.7)	3 (30)	0.039	4.6
higher	11 (33.3)	7 (70)		
EXP				
lower	22 (66.7)	7 (70)	0.844	0.9
higher	11 (33.3)	3 (30)		
REAS				
lower	21 (63.6)	8 (80)	0.333	0.4
higher	12 (36.4)	2 (20)		

lower = Difference ≤ 0 ; higher ≥ 0 ; PAL = palliative reactions; ACT = active confrontation or dealing with the problem; AV-W = avoidance/waiting; SOC = seeking for social support; PAS = passive reaction pattern; EXP = emotional expression; REAS = reassuring thoughts. Figures in parentheses indicate percentages.

subscale ‘social contacts’ (OR = 1.5) and a lower relative risk of a higher score on the subscale ‘reassuring thoughts’ (OR = 0.4) compared to students with no higher VHI score after two trainee periods. For other subscales than the ‘passive reaction pattern’, no significant result could be obtained.

Psychosomatic Well-Being. Table 3 shows the difference between the VHI total scores before and after two trainee periods related to the difference between the SCL-90 total and subscale scores before and after the trainee periods (n = 43).

Students with a higher VHI total score after two trainee periods had a significantly higher score on the subscale ‘miscellaneous items’ (p = 0.001) as well as a high relative risk of a higher score on the subscales ‘depression’ (OR = 4.8), ‘interpersonal sensitivity’ (OR = 10.0) and ‘hostility’

Table 3. Difference between the VHI total scores before and after the trainee periods related to the SCL-90 total and subscale scores (difference = after minus before) (n = 43)

SCL-90	VHI		p (Pearson χ^2)	Odds ratio
	low	high		
ANX				
lower	29 (87.9)	9 (90)	0.855	0.806
higher	4 (12.1)	1 (10)		
AGO				
lower	31 (93.9)	10 (100)	0.425	0.939
higher	2 (6.1)	0 (0)		
DEP				
lower	29 (87.9)	6 (60)	0.047	4.8
higher	4 (12.1)	4 (40)		
SOM				
lower	27 (81.8)	6 (66.7)	0.326	2.3
higher	6 (18.2)	3 (33.3)		
IN				
lower	25 (75.8)	8 (80)	0.781	0.781
higher	8 (24.2)	2 (20)		
SEN				
lower	30 (90.9)	5 (50)	0.004	10.0
higher	3 (9.1)	5 (50)		
HOS				
lower	29 (87.9)	5 (50)	0.010	7.3
higher	4 (12.1)	5 (50)		
SLE				
lower	26 (78.8)	8 (80)	0.934	0.929
higher	7 (21.2)	2 (20)		
MISC				
lower	33 (100)	7 (70)	0.001	1.4
higher	0 (0)	3 (30)		
TOT				
lower	29 (87.9)	7 (77.8)	0.443	2.1
higher	4 (12.1)	2 (22.2)		

lower = Difference ≤ 0 ; higher ≥ 0 ; ANX = anxiety; AGO = agoraphobic anxiety; DEP = depression; SOM = somatic complaints; IN = insufficiency in thinking and acting; SEN = interpersonal sensitivity and mistrust; HOS = hostility; SLE = sleeping problems; MISC = miscellaneous items. Figures in parentheses indicate percentages.

(OR = 7.3). No significant results, but a meaningfully higher relative risk (odds ratio) was found for the subscale 'somatic complaints' (OR = 2.3) and the SCL-90 total scores (OR = 2.1). No significant relation or meaningful relative risk was found for the subscales 'anxiety', 'agoraphobic anxiety', 'insufficiency in thinking and acting' and 'sleeping problems'.

Discussion

This study examined the role of the trainee periods in relation to voice handicap, coping style and psychosomatic well-being in young female student teachers. Remarkably, after two trainee periods almost 1 out of 5 of the student teachers showed higher VHI total scores. The students may experience an increased voice handicap due to the vocal load of the trainee periods. Moreover, the students may become more aware of the degree of severity of their voice handicap after completing the VHI two times as demonstrated by Jacobson et al. [24].

After the two trainee periods, the general coping style has changed. On the subscale 'passive reaction pattern', about 40% of the students showed higher scores after training periods. This means that these students show a reactive-defensive situation-oriented coping mode. A 'passive reaction pattern' facilitates a decrease in self-confidence and lack of confrontation with the problem and active handling. McCormick [30] found that stress attributable to student misbehaviour was associated with immature defence styles. About one third of the students showed higher scores on the subscale 'emotional expression pattern' after training periods. That is also reactive-defensive but, according to previous research [27, 31], orientated towards reduction in tension. Furthermore, the 'passive reaction pattern' score is double that of the active-offensive situation-oriented active coping mode after the trainee periods. This indicates that the increase in defensive coping modes has a considerable share in the change of the coping style, compared to offensive modes. This means that the students have less possibilities to handle problems in a relaxed way from different perspectives, to arrange things in a logic manner, to act purposely and self-confidently in problem solving [27]. The subscores 'palliative reactions' and 'seeking for social support' are mixed oriented and can be used in both reactive-defensive and active-offensive modes of coping. On these subscales, about 40% of the students scored higher after the trainee periods. It may be assumed that these coping modes support the defensive coping style. Wilson [32] reported that most teachers tend to be palliative, not being able to cope with the root causes of their occupational stress. However, whereas direct action may appear the best strategy for reducing job stress, this is not always possible to apply. In such situations, palliative modes of coping may be indicated. The relatively new teaching experience in the classroom gives most students reason to talk about it with fellow students or the professional teacher. This may explain why a relatively

large number of students had sought social support, which is in accordance with the findings of Murray-Harvey et al. [19] who found that during teaching practicum the students' coping strategies point to the importance of social support networks. Furthermore, Dunham [33] found that seeking social support is frequently reported by teachers. Low levels of social support are related to psychological distress [34]. Therefore, seeking social support can be an adequate coping method in selected circumstances. About 30% of the students showed a higher score on the active-offensive cognitive-oriented subscale 'reassuring thoughts' after the trainee periods. A palliative effect is a certain part of reassuring thoughts.

The situation-oriented modes of coping, i.e. 'active confrontation or dealing with the problem' and 'avoidance/waiting', show a similar relatively less increase after the trainee periods. 'Active confrontation or dealing with the problem' is an active-offensive mode, whereas 'avoidance/waiting' is a reactive-defensive mode. This means that both offensive and defensive modes increase, and that there is no absolute preponderance of the 'passive reaction pattern' in situation-oriented coping after the trainee periods.

Coping behaviour is dependent on the context in which it occurs and has to do with defining the problem, generating alternative solutions, weighting alternatives and finally, selecting them and taking into action [31]. The effectiveness of a particular coping style depends on several dimensions of the situation and events such as duration, frequency, intensity, predictability, and being manageable [27]. Furthermore, an actual coping strategy depends on individual factors, such as personality [35, 36]. The results of this study reveal that different coping strategies are used by the students, from reactive-defensive to active-offensive ones. Coping strategies may be inadequate and the student could benefit from help. However, Brown and Uehara [37] reported that novice teachers are often reluctant to ask for help, which in turn may lead to additional stress. Reluctance was also found in starting female teachers and student teachers where only around one third sought voice care [13]. This carries the risk of a vicious circle.

The pertinent study showed that the group of students with a higher VHI score after the trainee periods had a significantly higher score plus a higher relative risk of a higher score on the 'passive reaction pattern' ($p = 0.039$; $OR = 4.6$). However, they showed a low relative risk of a higher score on 'reassuring thoughts' after the trainee periods ($OR = 0.4$). This indicates that stu-

dents with a higher VHI score after the trainee periods have a more reactive-defensive than active-offensive coping style, which may be supported by the high relative risk of having an increased score on 'seeking for social support' ($OR = 1.5$). A passive coping mode is supposed to be an ineffective way of changing a voice handicap. In order to change vocal patterns, it is more desirable to show flexibility and act in a cooperative style instead of showing patterns of externalization [38]. According to Admiraal et al. [31], this emotion-focused coping form is more likely to occur when nothing can be done to modify environmental conditions. In the authors' opinion and experience, an active coping style is preferable to achieve independent attitude. Adaptive, personal coaching where the student sets new goals to modify the trainee context can change coping modes into a new coping style. This can lead to better handling of problems by the student and consequent progress in a psychological cascade towards recovery, and ultimately to positive emotions and a change in attitude [38]. The student might then be prepared to make emotional changes that can result in positive reappraisal. Less distress with dysfunction and less voice problems on the long term may be the positive result of an active coping style. This seems to be in line with Admiraal et al. [31] who stated that an inactive coping behaviour was found to be ineffective in changing problematic classroom behaviour.

Most of the students did not show considerably increased scores after two trainee periods on SCL-90 total and all subscales. In the experience of the authors, most students are nervous before starting the first trainee period and they initially may not feel comfortable in front of the classroom. Insecurity about the difficulty of the study, the interactions and pupil behaviour patterns in the trainee periods could make the students more nervous and stressful at the beginning. This is reflected in the scores after two trainee periods: most students did not show higher scores. It is not expected that they encounter more distress during the training periods than they did before. Probably on the contrary, distress may be changed after positive trainee experiences, which can reduce instant insecurity and fear.

The students who had a higher VHI total score after the trainee periods showed no higher score on the SCL-90 total scale ($p = 0.443$), but they did have a meaningfully higher relative risk of a higher score on the SCL-90 total scale ($OR = 2.1$). Also no significant difference, but a meaningfully higher relative risk was found for the subscale 'somatic complaints' ($p = 0.326$; $OR = 2.3$). This

means increased physical dysfunction, especially regarding the autonomous and muscular system [29]. A significantly higher score plus a high relative risk of a higher score after the trainee periods was found for the subscales 'depression' ($p = 0.047$; OR = 4.8), 'interpersonal sensitivity' ($p = 0.004$; OR = 10.0) and 'hostility' ($p = 0.010$; OR = 7.3). This forms a pattern composed of depressed mood, dissatisfaction with oneself in relation to other persons and negative mood [29].

The classroom experiences in the first year of education did not include professional stress, such as workload, classroom discipline and pupil misbehaviour known as teaching stressors [39, 40]. Stressors among students were merely based on the fact that students were not well acquainted with the demands of the starting profession in general and the trainee periods in particular. Voice handicap on the one hand and depression, interpersonal sensitivity and hostility on the other hand can be seen as related in student teachers after trainee experience. Previous studies [12, 13] showed a relation between voice problems and stress and anxiety. It is assumed that students with a high relative biopsychosocial impact of the voice after trainee periods might be less satisfied with themselves and in relation to other individuals in the trainee periods. Feelings of insecurity in social interaction with colleagues, tutors and (university) teachers could lead to a more hostile attitude. These findings are in line with the study of Vanhoudt et al. [41] who demonstrated that professional teachers with a high voice handicap showed relatively high scores on all the subscales of the SCL-90.

Conclusions

The pertinent study revealed a relation between the biopsychosocial effect of the voice on the one hand and general coping style and psychosomatic well-being on the other hand, after two trainee periods. Student teachers with a higher impact of the voice after two trainee periods showed a more reactive-defensive coping style and had less psychosomatic well-being. These findings may call for a different attitude of the (university) speech therapist. The main objective should be to change the passive coping method of students with a voice handicap into a more active style and to stimulate the prospective teacher to implement this attitude into future trainee activities. The speech therapist should take into account that together with changing the voice handicap, potential risk factors of psychosomatic well-being might be important in coaching the student teachers. It may be assumed that students with a high relative biopsychosocial impact of the voice are less satisfied with themselves in relation to other individuals. A more hostile attitude and feelings of insecurity in social interactions with other people, e.g. speech therapists, tutors and (university) teachers, could be the consequence. The students might be hindered from changing the coping method. A multidisciplinary approach, with a key role for the speech therapist, is important in order to change the passive coping style and reduce adverse psychological factors.

It should be noted that the results of the pertinent study do not provide a pronouncement on the causal relationships between the biopsychosocial effect of the voice, general coping style and psychosomatic well-being. Further research is recommended to create a model for investigation of the causal relationships.

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