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## CHANGES AND PREDICTORS OF PRE-SERVICE PHYSICAL EDUCATION TEACHERS' SUBJECTIVE WELL-BEING OVER THE COURSE OF THE SEMESTER

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### ABSTRACT

The life of university students is indeed stressful. Assignments, exams, and other study-related variables supposedly decrease students' subjective well-being (SWB). This study investigated pre-service physical education (PE) teachers' SWB, using the FAHW questionnaire on three different measurement points (beginning of the semester, middle of the semester, and end of the semester). Data analysis revealed surprising results. There were no significant changes of pre-service PE teachers' SWB over the course of the semester. Additionally, no significant correlations between this study's variables and the FAHW scales could be found. Therefore, a predictor analysis was pointless. However, the FAHW appeared to be a valid and reliable instrument to assess SWB in this study's focus group of pre-service PE teachers.

**Keywords:** College Students; Higher Education; Physical Education Teachers; Pre-Service Teachers; Teacher Education; Well-Being

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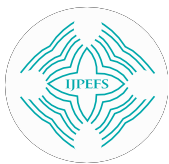
### INTRODUCTION

University students' life is assumed to be a hard one. Being a student is not easy in general. Multiple stressors increase the students' stress level on multiple occasions, as they struggle to cope with their "occupational" study and personal life [1-3]. Course assignments and exams as well as social interactions with peers, eating, cleaning, sleeping, etc. have to be merged into a successful work and life balance by the students. From a health psychology perspective, the perceived subjective well-being (SWB) of the particular individual plays a major role of how that individual experiences his/her quality of life [4]. Happiness, positive and negative affect, and life satisfaction are encompassed by SWB [5]. Briefly, a positive SWB is associated with a greater health level [6]. As this relationship between SWB and health can be assumed to be a general one for all populations, university

students' health is supposedly essentially influenced by their SWB.

A study conducted by Tuzgöl-Dost [7] investigated the SBW among Turkish university students. The purpose of that study was to examine the relationship of SWB to gender, perceived economic status, perceived parental attitudes, and physical appearance. Although no statistically significant differences could be found for gender, there were statistically significant differences in SWB in regard to perceived economic level, perceived attitude of parents, satisfaction with physical appearance, religious belief, and locus of control.

Another more recent study by Ratelle, Simard and Guay [8] investigated the relation between university students' SWB and perceived autonomy support from parents, friends, and the romantic partner. Results show that higher levels of students' SWB were predicted by the



support their autonomy. According to the results of that study, the authors suggested that students' highest levels of SWB occurred when all sources were perceived highly autonomy supportive.

In another Turkish sample in university students, Yilmaz and Arslan [9] found that positive and negative affects statistically significantly explain SWB. However, that study's results showed a statistically significant negative correlation between SWB and negative affect as well as a statistically significant positive correlation between SWB and positive affect.

For the population of teachers, Cenkseven-Onder and Sari [10] tackled the rate of how teachers' SWB is predicted by their perceived quality of school life and burnout levels. SWB levels were statistically significantly predicted by Quality of School Life Scale sub-factors ("status" and "curriculum") and the burnout scale factor "coping work-related stress". Consistent with these findings, Pillay, Goddard and Wilss [11] examined the relationship between well-being, burnout, and competence in Australian teachers. Teachers' burnout levels were statistically significantly associated with self-rated well-being and self-rated competence.

In multiple samples of Chinese pre-service and in-service teachers investigated by Chan [12-14], contributions of gratitude, forgiveness, and orientations to happiness to teachers' SWB could be found. In addition, character strengths have been found associated with (teachers') life satisfaction [15,16].

Although some empirical evidence in school physical education (PE) students is available [17], for pre-service and in-service PE teachers, to my knowledge, there are no research findings available regarding a multidimensional SWB approach. Nevertheless, some studies focused on the difficulties pre-service PE teachers experienced over course of their studies [18] or on novice in-service PE teachers' problems and needs [19]. Furthermore, single study could be

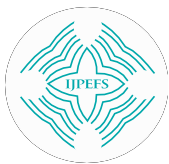
students' perception that significant individuals

identified that featured SWB of Macedonian university sport and PE students [20]. However, emotional competence as a predictor of SWB was the study's main focus, whereas SWB was assessed one-dimensionally.

The aim of this study was to determine pre-service PE teachers' SWB and study-related associated factors. The rationale of the study was set in regard to the fact that (pre-service) PE teachers are supposed to be physically fitter and more physically active than other subject students due to their study program's content [21]. Physical activity and sports are part of their courses, serving both as content and method. Nonetheless, pre-service PE teachers are exposed to the same stressors as other subject students are, making them an interesting study population. Furthermore, research has shown a direct influence of physical activity on SWB [22], especially in the university student population [23]. Hence, this study investigated whether there were changes in pre-service PE teachers' SWB over the course of the semester. Furthermore, study-related predictors of pre-service PE teachers' SWB should be identified.

## METHODS

Participants were recruited from first-year kinesiology/sport science students at the University of Stuttgart, Germany. Among the kinesiology/sport science students, a total of 41 students majoring in physical education teacher education (PETE) participated in the study, serving as this study's basic pre-service PE teachers sample. SWB was assessed three times: at the beginning of the semester, at the middle of the semester, and at the end of the semester. The FAHW [24,25] questionnaire was used to assess pre-service PE teachers' SWB. In addition, personal data and study-related variables such as age, the number of course credit hours, courses, practical activity courses, final written exams, final practical exams, hours of exercise activities outside the study program, and hours of work



per week (for the current semester) were included in the final questionnaire, too.

The FAHW questionnaire is the only questionnaire available in German language that features all SWB dimensions (physical, psychological, and social), covering also their respective positive and negative characteristics. The FAHW contains the scales physical well-being (7 items), physical ill-being (7 items), psychological well-being (7 items), psychological ill-being (6 items), social well-being (8 items), and social ill-being 7 items). In sum, the FAHW consists of a total 42 items.

Negovan [26] developed a university student-specific SWB questionnaire, but it is not pre-service teachers'-specific, does not cover both negative and positive characteristics of SWB dimensions, lacks the physical dimension, and is eventually not available in German. The FAHW was not developed for university students or pre-service teachers either, but university students majoring in kinesiology/sport science and PETE were part of the diverse explanatory validation samples that were used to validate the FAHW [24,25]

From the initial 41 participants, only 34 participants completed the FAHW on all of the three measurement points. Therefore, only the FAHW data from these 34 participants were included in the statistical analysis. In addition to the descriptive reporting of the data, correlations, and analysis of variance (ANOVA) were conducted to determine changes in participants' SWB over the three measurement points. To identify possible gender differences, independent sample t-tests were performed. The statistical analysis was conducted using IBM SPSS Statistics (Version 21) for Mac OS.

## RESULTS

Among the 34 first-year pre-service PE teachers, 24 participants were male and 10 participants

were female. Overall, the participants were an average of 22.44 (SD=0.46) years old and took an average of 20.24 (SD=6.45) course credit hours for the current semester. The course credit hours refer to the European Credit Transfer and Accumulation System (ECTS). In this case, one ECTS credit hour equals a student workload of 30 hours.

The participants took an average of 9.82 (SD=2.89) courses for the current semester, including an average of 3.76 (SD=2.31) practical activity courses. The physical activity courses were typically entitled similar to individual sports and games, such as Volleyball, Swimming, or Track and Field.

The pre-service PE teachers were to take an average of 5.65 (SD=2.83) final written exams and an average of 2.41 (SD=1.66) final practical exams at the end of the current semester. Typically, physical activity courses contain both a final written exam and a final practical exam.

The participants exposed themselves to an average of 8.71 (SD=4.38) hours of exercise activities outside of their study program for the current semester. They worked an average of 5.21 (SD=5.98) hours per week.

There were no statistically significant gender differences in regard to age, course credit hours, courses, practical activity courses, final written exams, final practical exams, exercise activities outside study program, and work ( $p>0.05$ ). There was a statistically significant difference in the values for work hours per week between male ( $M=3.83$ ;  $SD=0.96$ ) and female pre-service PE teachers ( $M=8.50$ ;  $SD=2.39$ );  $t(32)=2.19$ ,  $p=0.035$ .

The complete descriptive statistics of the study group are shown in Table 1.



**Table 1. Descriptive statistics of study group**

Variable (Unit)	Male (N=24) (M) (SD)	Female (N=10) (M) (SD)	Total (N=34) (M) (SD)	t-test
Age (Years)	22.83 (0.54)	21.50 (0.54)	22.44 (0.46)	n.s.
Course Credit Hours (N)	20.25 (1.51)	20.20 (1.01)	20.24 (6.45)	n.s.
Courses (N)	9.75 (0.66)	10.00 (0.60)	9.82 (2.89)	n.s.
Practical Activity Courses (N)	3.79 (0.60)	3.70 (0.51)	3.76 (2.31)	n.s.
Final Written Exams (N)	5.92 (0.62)	5.00 (0.72)	5.65 (2.83)	n.s.
Final Practical Exams (N)	2.46 (0.37)	2.30 (0.42)	2.41 (1.66)	n.s.
Exercise Activities outside Study Program (Hours per Week)	8.25 (0.97)	9.80 (1.05)	8.71 (4.38)	n.s.
Work (Hours per Week)	3.83 (0.96)	8.50 (2.39)	5.21 (5.98)	2.19*

*Note . \*p<0.05. M=Mean. SD=Standard Deviation. N=Number. n.s.=not significant.*

For research instrument validation purposes, the FAHW scores of all of the three measurement points were merged (N=102) and a reliability analysis (Cronbach's  $\alpha$ ) was performed. The results of the reliability analysis are shown in

Table 2. Only Cronbach's  $\alpha$  values are reported, as reporting mean values for the respective scales would be pointless due to this study's purpose.

**Table 2. Reliability analysis of FAHW scales**

FAHW Scale (N=102)	Cronbach's $\alpha$
Physical Well-Being (7 items)	0.85
Physical Ill-Being (7 items)	0.80
Psychological Well-Being (7 items)	0.79
Psychological Ill-Being (6 items)	0.82
Social Well-Being (8 items)	0.69
Social Ill-Being (7 items)	0.71

*Note. N=Number.*



To test whether there was a change of the study groups' SWB over the course of the semester, an ANOVA was performed. As the FAHW scores of all of the three measurement points did not descriptively vary much, the ANOVA did not show any statistically significant differences between participants' SWB at the beginning of the semester (baseline), the middle of the semester ("half time"), and the end of the semester (final exams preparation) either ( $p > 0.05$ ). The descriptive FAHW mean scores

for the three measurement points and the results of the ANOVA are shown in Table 3.

As the ANOVA did not show any statistical significant results, the usually following post-hoc comparisons using the Bonferroni correction were not conducted either. Moreover, graphs displaying the FAHW scales mean scores over the course of the three measurement point will also not be shown, as the differences in the measurement points were too marginal for a sensible and meaningful showing.

**Table 3. Pre-service PE teachers' SWB over the course of the semester (ANOVA)**

FAHW Scale (N=34)	Semester Beginning (Baseline) (M) (SD)	Semester Middle ("Half Time") (M) (SD)	Semester End (Final Exams Preparation) (M) (SD)	F	$\eta^2$
Physical Well-Being	4.08 (0.66)	4.05 (0.76)	4.00 (0.73)	0.518	0.16
Physical Ill-Being	1.71 (0.61)	1.84 (0.87)	1.87 (0.87)	2.449	0.07
Psychological Well-Being	3.77 (0.48)	3.66 (0.57)	3.71 (0.65)	0.993	0.03
Psychological Ill-Being	1.94 (0.50)	2.01 (0.70)	2.10 (0.74)	1.345	0.04
Social Well-Being	4.13 (0.36)	4.06 (0.44)	4.04 (0.50)	1.035	0.03
Social Ill-Being	1.84 (0.43)	1.96 (0.46)	1.92 (0.59)	1.718	0.05

*Note.* N=Number. M=Mean. SD=Standard Deviation.

Following the negative results that revealed no statistically significant changes in the study groups' SWB over the course of the semester, a correlation analysis (Pearson) of the study's variables in relation to the FAHW scales was conducted. Therefore, the participants' whole data sets of the three measurement points were merged into one single data set (N=102). Surprisingly, no study variable (age, course

credit hours, courses, practical activity courses, final written exams, final practical exams, exercise activity outside study program, and work) did show any statistically significant correlation to any of the FAHW scales.

As no statistically significant relation between in this study's assessed variables and the FAHW scales could be found, the usually following regression analysis to reveal predictors was not



be performed either, as it would have been

## DISCUSSION

The study sample's age characteristics stand for a relatively old study population in regard to the average entry age for university/college. In comparison to other countries, Germany's school education takes 12 to 13 years and leads to older first-year students compared to international standards. Additionally, this study's sample may be biased in regard to vocational school or other majors transfer students. For instance, the oldest participant was 32 years old, whereas the youngest was 20 years old.

The fact that there was no significant difference in all of the study variables regarding gender except for one was expected. As first-year PETE students take mostly the same courses and have a similar study plan, there is not much room for diverse results in this case. However, the enormous difference in hours of work per week (an average of 6.67) between male and female pre-service PE teachers may be explained by the fact that female university students tend to be more focused and motivated than male ones [27], which may as well transfer to work motivation and achievement. A subject-specific phenomenon may also be assumed [28]. However, this is mere speculation.

The reliability analysis of the FAHW showed satisfying results. Cronbach's  $\alpha$  values are consistent with Wydra's validation studies. Despite the lower Cronbach's  $\alpha$  level of 0.69 for the scale social well-being, the FAHW questionnaire can be regarded as a valid and reliable instrument for assessing SWB in university students and pre-service PE teachers. A change in the study groups' SWB over the course of the semester was expected, at least for the end of the semester, as exams preparation times usually is stressful and may influence

pointless in regard to the missing correlations.

students' SWB. A difference between the beginning of the semester and the on-going semester was expected, too, as assignments usually tend to be less frequent at the beginning of the semester and increase in quality and quantity over the course of the semester. In addition, it was expected that there were some significant correlations between the study's variables and the FAHW scales, as it is plausible that the time-consuming and stress causing study variables negatively influence students' SWB. However, none of these expectations came true. The surprising result that there was no change in the participants' SWB may be explained by the time span of a semester. A semester at a German university usually lasts about 13 to 16 weeks.

The construct SWB and the FAHW may be too "habitual" and stable to show significant changes in such a short term. Maybe there was just too less time between the measurement points to allow any changes. Expanding the time span between measurement points to whole study years in a larger longitudinal design may lead to a possible observation of such changes.

The surprising lack of any significant correlations, that did not allow a sensible predictor analysis, may be explained by a focus group bias or idiosyncrasy. Maybe the focus group of pre-service PE teachers is a special one due to its relation to physical activity content and biography. As research has shown that academic achievement and physical activity are related [29], it may as well be possible that SBW may intertwine with these constructs in the pre-service PE teacher population.

Interestingly, Mitic, Savic, Savic and Stojiljkovic [20] could perform a regression analysis that eventually revealed that 30.0 % of the variance in university sport and PE students' SWB could be explained by emotional



competence. However, they only used a short scale for assessing SWB that only covered psychosocial aspects of the construct. Other competences such as social or physical/motor competence in pre-service and in-service PE teachers may be researched in-depth in the future, hoping to increase the explained variance further.

Future research may focus on interventions and strategies to increase pre-service and in-service PE teachers' SWB, as previous studies have been successful in other subject teachers. In an Indian sample, Kumar and Madialagan [30] found that occupational stress reduction in PE is predicted by diverse coping strategies on various levels. A similar research design may be applied to the field using a SWB framework.

Although university student-specific SWB questionnaires are available, they mostly focus on the psychological and social domains [31-33]. Focus group (pre-service and in-service PE teachers)-specific multidimensional SWB research instruments should be developed that include well-being and ill-being facets as well as all domains, including the physical one.

### CONCLUSION

This study's purpose was to determine whether pre-service PE teachers' SWB changes over the

course of the semester. Furthermore, study-related predictors of pre-service PE teachers' SWB should have been identified. Therefore, the FAHW questionnaire was used in first-year pre-service PE teachers applying a repeated measures approach on three measurement points over the course of the semester.

However, the study's results indicated that there were no descriptively and statistically significant changes in the study groups' SWB over the course of the semester. Moreover, no predictors of pre-service PE teachers' SWB could be identified, as no statistically significant correlations between this study's variables and the FAHW could be found.

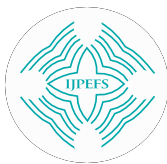
Nevertheless, the FAHW appeared to be a valid and reliable research instrument for assessing SWB in the population of pre-service PE teachers. This study was, to my knowledge, the first empirical research attempt to survey the population of pre-service PE teachers using a multidimensional SWB approach.

### ACKNOWLEDGMENTS

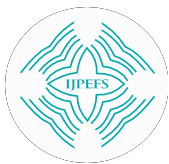
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