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School of Management and Governance
B.Sc. Public Governance across Borders

**The dark side of PSM - An analysis of the relationship between the level of Public Service
Motivation and the level of Stress**

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Abstract

Occupational stress is caused by several factors that can be related to the individual or organizational level and has an influence, amongst other consequences, on the well-being and performance of an employee. One of these factors, which has rather recently come to attention and specifically relates to the public sector, concerns Public Service Motivation (PSM). The findings of the limited number of studies on the relationship between PSM and stress are ambiguous. On the one hand, PSM has been known for its optimizing function in many relationships where stress is involved (a negative correlation between motivation and stress). On the other hand, it has been suggested that high levels of motivation, amongst other causes, contributes to stress (a positive correlation between motivation and stress). By means of a case study based in Münster (Germany), this study aims to contribute to this field of research and will investigate on the dark side of PSM in its relationship to stress. Various articles report that secondary school teachers increasingly complain about having stress at the workplace. In order to explain the high level of stress, this paper applies the Job Demand-Resource Model as a theoretical background. A web-based survey was sent to a selection of publicly employed secondary school teachers from different types of secondary schools to investigate if PSM is a cause for occupational stress in this sector. Overall, this paper aspires to a better understanding of the issue and, based on this research, aims to give recommendations on how to deal with motivation and stress.

Keywords: Public Service Motivation, Stress, Public Sector, Motivation, Secondary School Teachers

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1. Introduction

1.1 Background of this research

Stress is not a new phenomenon. Numerous studies state that it is a part of the daily life of many employees. ‘Stress’ is a state of pressure that is higher than the available specific resources, abilities, support, and knowledge, so that the person is not able to stand the strain (WHO, 2016). Even the existence of a global stress organization (Gostress.com, 2016) and various articles in newspapers and scientific journals show, that stress plays an important role in the life of many human beings. Supporting the thesis by Breucker et al. (2013), the ‘Bundesanstalt für Arbeitsschutz und Arbeitsmedizin’ states, that especially the public sector is affected by stress.

One of these factors, which has rather recently come to attention and is specifically related to the public sector, is concerned with the Public Service Motivation¹ (PSM). The findings of the limited number of studies on the relationship between PSM and stress are ambiguous. The direct consequences of the impact of stress are influencing the individual well-being, have disadvantages on the work behavior, high compensation costs for health and the impact on the individual performance (Hamann & Foster, 2014; Breucker et al., 2014; Arnetz et al., 2011). This leads to the issue that the treatment of psychological diseases has high costs directly for the organizations, but also additional costs due to the unfavorable performance of the employee affected by stress (Breucker et al., 2014). Not only that, the individual suffers the most by being impaired in their everyday functioning.

Factors that contribute to an increasing level of stress are defined by Breucker et al. (2014): simultaneously working on multiple tasks, interruptions in the working process, time pressure and pressure to perform, monotonous tasks and confrontation with new tasks. Furthermore, the employee goes over to the daily routine without questioning the work procedures or even to find ways for improvement in the mechanisms which affects the work performance negatively. The various causes of stress can be distinguished by individual factors and organizational circumstances. Besides many internal stressors, also a great amount of stress determinants of stress arises while the individual has to find a way to cope with these stressors personally (Liu et al., 2014).

¹ In this paper, the terms Public Sector Motivation and Public Service Motivation are used simultaneously.

Perry and Wise (1990) describe PSM as the condition in which the individual “respond[s] to motives grounded primarily or uniquely in public institutions and organizations“ (Perry & Wise, 1990, p. 368). In other words, Public Service Motivation can be understood as the research on a specific type of organization and its relationship towards the people working in this sector. Houston (2005) discovered, that public sector employees are more willing to serve in the interest of others by helping through monetary donations or altruistic actions (e.g. donating blood) compared to their counterparts working in the private sector. He also puts effort into an analysis of the rewarding procedures and their success in the different sectors. In that respect, he discovered that extrinsic factors like monetary incentives (e.g. within the pay-for-performance system) do have a less motivational effect on people working in the public sector than for employees of the private sector. This highlights why it is even more important, that employers of public organizations introduce other rewarding factors that increase the motivation and that are accompanied by a greater identification with the working sector. Moreover, the compatibility of an individual with the public sector is thought to be high, if the employee has a high level of PSM compared to employees with a low level of PSM (Bright, 2008).

Due to certain characteristics of the public sector, it is important to focus on this specific type of organization when analyzing any further relationship (Liu et al., 2015). To name some examples, the public sector provides stable working conditions with unlimited contracts, subcontracted employment is not applied in this working field and many trainings are offered by the employers of the public sector (Ellguth & Kohaut, 2011). The public sector is an outstanding working field based on its motives of motivation, as due to serving the public, this sector’s employees may have a different perspective on what motivation means to them. Therefore, the core idea of this paper is to relate the issue of Public Sector Motivation to a specific type of public organization. Numerous articles state, that stress is a highly problematic issue in this public sector (e.g. Bauer et al., 2005; Gebauer, 2000; Unterbrink et al., 2007). Bauer et al. (2005) have shown, that teachers do have the highest burnout rate among other jobs that are based on interpersonal relationships. Even though secondary school teachers are rather specific, they also play a great role in the development of the society as such and leave their mark on their students lives (Institut für Demoskopie Allensbach, 2011). Moreover, it is important to use education as a learning of personality development, team spirit and the willingness to help that is not only important in the younger age, but also in the future. Therefore, the unit is composed of secondary

school teachers. The advantage of secondary school teachers compared to primary school teachers is the fact, that the researcher is able to differentiate between the different school types (Hauptschule, Realschule, Gymnasium, Gesamtschule), that cannot be done by only looking at primary schools. This additional detail is the decisive point to take secondary school teachers as a specific case.

The positive association of PSM and other work related outcomes shows its great importance when talking about research in this subject area. The effects of stress are often measured by job satisfaction, identification with the type of organization or performance (Anderfuhren-Biget et al. 2010; Bright, 2008; Crewson, 1997; Norris, 2003, Vandenabeele, 2009; Bright, 2007; Lui et al., 2015). By considering the results of the various studies, it comes to one's attention, that PSM is most often identified as being a positive variable in this relationship and suggested to improve the situation of the individual and furthermore his or her working performance (Giauque et al., 2013).

The aim of this paper is to prove a potential relationship between the level of motivation and the level of stress.

This paper is structured as follows: In general the scientific relevance and research question of this paper are presented. Secondly, the main theories on stress are presented in order to show the foundation this paper is based on. Moreover, the most important concepts are introduced. Thirdly, the variables used for this research are presented. Furthermore, the reader is introduced to the research design, the data collection method and the justification of the case selection and sampling. Moreover, this paper states how this study is operationalized. The data analysis follows this part. If the results show a positive relationship between PSM and stress, the next part is reserved for recommendations that will either focus to minimize the effect, or to increase the impact of PSM on stress, because one assumes, that stress has mainly negative effects.

2.1 Scientific relevance

In the last years, numerous researchers investigated the relationship between PSM and stress (Lui et al., 2015; Giauque et al., 2013). However, the outcomes of the limited research that has been

done on PSM and stress in the public sector, are ambiguous. The research that has been done on the relationship between stress and PSM has not yet been applied to a specific theory (Lui et al., 2015). Many researchers call for further examination of this particular field in order to address this issue from a scientific perspective (e.g. Czerwenka, 1996; Kyriacou, 2001). Moreover, other researchers (Giauque et al., 2012; Giauque et al., 2013; Lui et al., 2015) recently discovered, that PSM might also be positively related to stress, meaning that a high level of PSM rises, the stress level increases as well. Giauque et al. (2012) revealed that a high level of motivation strengthens the personal ambitions in that respect, that one develops further and is not suitable with the prior business prospects anymore. According to them, the positive effect of PSM has now turned into the so-called “dark side” of PSM. As a consequence, the daily life and job expectations cannot be met and the likelihood of being affected by occupational stress, and diseases resulting from it, increases. Therefore, this paper aims to better understand and explain the issue of stress and PSM and its outcomes.

Furthermore, if the research confirms a relationship between the two variables, the aim is to give recommendations and how PSM could be used to improve the current stress levels of public sector employees and to give advice on how to deal properly with motivation and stress. Due to the research conducted by Lui et al. (2015) and Giauque et al. (2013), one specific question emerges: What is the relationship between Public Sector Motivation and stress? Moreover, this paper aims to provide details on the dark side of PSM and examines the model of Job Demand-Resources in its applicability with the help of an analysis of the level of stress of secondary school teachers.

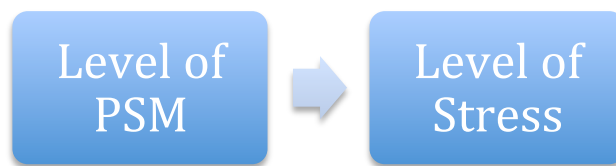
The objectives of this paper are therefore: (a) to consider how PSM is related to stress and (b) if the relationship between both variables is expected to be positive. Moreover, (c) it aims to develop recommendations in order to help employees of the public sector to cope with stress and its consequences.

2.2 Research Question

There seems to be a relationship between the level of PSM and the level of stress. Due to the fact that the research on this topic is ambiguous and the discovery that PSM and stress are positively correlated is rather new, this paper aims at discussing whether the assumption can be verified

that a positive relationship between PSM and stress exists. In this relationship the variables are the level of PSM (independent variable) and the level of stress (dependent variable). Due to PSM being a cause of stress, this paper discusses an exploratory research question. Both variables are classified as being ordinal, because the different levels can be ordered, but the distance between the different levels is unknown. The units of analysis are publicly employed teachers of secondary schools in Münster. Therefore, the research question of this bivariate study is: *In how far does Public Service Motivation have an impact on the stress level of secondary school teachers?*

Graphic 1: *Causal Diagram of the Research Question*



Additionally, predictor variables are added, for example satisfaction at the workplace, work quota, influence on the work task, clarification of work tasks, working atmosphere, and contemporaneous work.

As the research question discusses a rather complex setting, sub-questions should help to narrow down the subject into smaller research parts in order to answer the exploratory research question.

Therefore, the sub-questions are the following:

1. What is the level of PSM of secondary school teachers?
2. What is the level of stress of secondary school teachers?
3. Is there a positive relationship between the level of PSM and the level of stress?

3. Theoretical Framework

As the research question includes the often-discussed concepts of stress and PSM, the following section aims at clarifying which definition is being used for this paper.

Conceptualization of Stress

Many researchers have thought about the concept of stress before. Sigriest (1996) defines stress as a state of imbalance between the high effort one is making and the low amount of rewards one is receiving for the action. Stress often becomes visible through its symptoms: exhaustion,

insomnia, occupational diseases like burnout, low self-esteem, and other related disorders well-known in the western society (Liu et al., 2015). The factors that contribute to stress are mostly personal circumstances, like “values, attitudes, perceptions, personalities, political skills, and motivations” (Liu et al., 2015, p. 654), as well as organizational factors such as the structure and allocation of responsibilities and tasks of the organization (Liu et al., 2015).

Conceptualization of PSM

Public Service Motivation can be understood as the research on a specific type of organization and its relationship with the people working in this sector (Rainey, 2014). Humans beings, compared to machines (Butz, 2015), are able to combine their creativity and do have the ability to develop strategies in order to achieve goals. Brewer (2000) additionally states that groups with different conceptions have different motives to work in the public sector. Moreover, autonomy and control play a great role in the fact, that the affection to regulate the behavior can be either related to their own characteristics (autonomous) or related to external influences and the environment (control) (Liu et al., 2015). Furthermore, employees with a high level of PSM are expected to be more internally motivated compared to people with a low level of motivation (Liu et al., 2015).

In summary, Public Sector Motivation is an attitude of an employee working in the public sector towards specific values and attributes that are based on an autonomous character. Moreover, the characteristics of the organization do play a great role in the working quality.

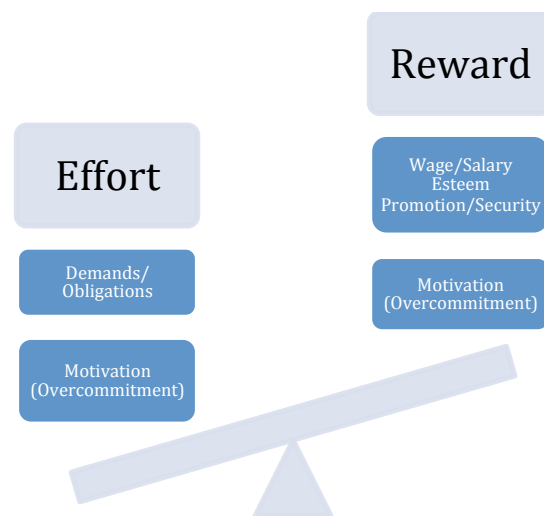
3.1 Models of Stress

In order to focus on the theoretical background of the main topic, this paragraph discusses a selection of models developed in regard to stress and its relationship to PSM.

In that respect, Siegrist (1996) developed the effort-reward imbalance model (ERI), where he discusses the reciprocity between efforts and rewards. In comparison to the Job-Demands Resource (JD-R) model, Siegrist also discusses the personal competences an employee has in order to overcome difficulties at work. Therefore, it is analyzed how the employee addresses specific stressors and the choice of strategy one chooses in order to cope with the stressor.

Additionally, the research by Siegrist examines the external conditions (e.g. low/high concurrence between colleagues) the employee is exposed to. He concludes, that people with a high degree of efforts, a low degree of rewards and little competences to cope with stressors are more likely to have a high degree of stress and stress-related diseases. In other words, stress is created if the costs and rewards are not balanced and the work state is low. People remain healthy if they have suitable strategies and a sufficient amount of resources to cope with the stressors. Possible rewards are of a financial manner, for example an increased salary or extra pay, or immaterial manner, for example recognition, esteem, the promise of job security, or the prospect of promotion. To conclude, if the balance between rewards and efforts is disturbed, the risk of being affected by occupational diseases increases (Siegrist, 1996).

Graphic 2: *Effort-Reward Imbalance Model*

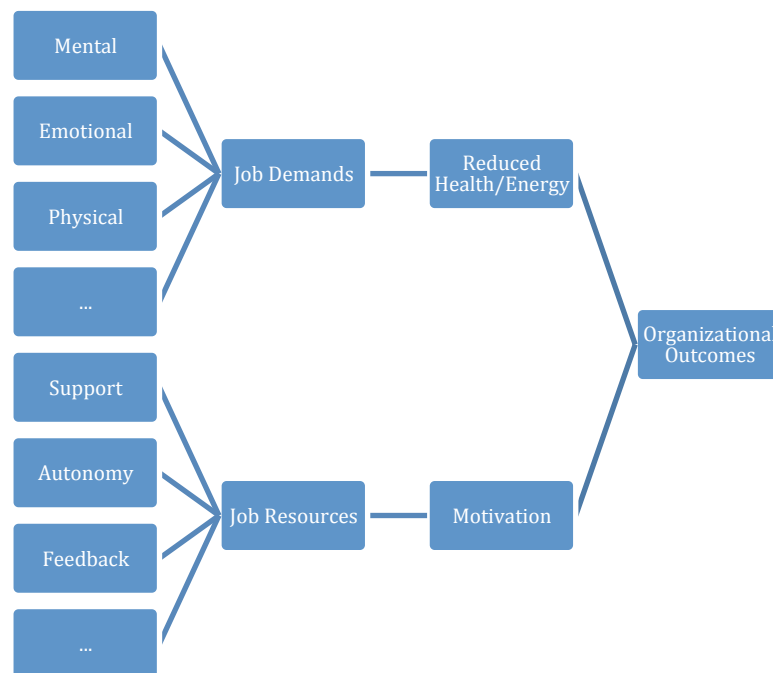


Because of a lack in explaining the increasing level of stress in the society, Karasek (1979) developed a model that shows the relationship on the level of job demands and the level of job decision latitudes. In that respect, it depends on the interrelation between the job demands and the degree of autonomy and freedom, if one is able to address the job demands sufficiently. If one has a high level of job demands and the degree of autonomy and freedom is limited, one feels a physical pressure and exhaustion (high strain job). On the other hand, Karasek (1979) assumes, that a high level of job demands and a high level of job latitude (active job) can encourage someone to further develop the competences in professional and private aspects. If the

level of demand and latitude are both low, one is neither mentally stressed, nor able to widen the spectrum of competences.

Further developments of Johnson and Hall (1988) include social support as an important component to the JD-R model. Therefore, it can be assumed that a high level of job demands, a low level of job latitude and a low level of social support lead to an even higher degree of mental stress (Iso-Strain job). Karasek and Theorell (1990) have agreed on this component and included social support into their own theory.

Graphic 3: *Job-Demands Resource Model*



Adapting the ideas of Karasek and Theorell, Demerouti and Bakker (2007) widen the understanding of the job resources. Therefore, physical, psychological, social as well as organizational aspects are introduced as job resources that help to reduce the strain produced by job demands. Depending on the type of job resource and the area of activity, the job resources help with modest success. The same applies to the job demands that differ in types and degree. It has to be stated that these job demands are not necessarily have to be associated to be negative. Only if the fulfillment of the demands cannot be met and if there are not sufficient resources to cope with these demands, they become stressors. In addition to functioning as a “repairing tool”, job resources also serve to maintain a higher degree of motivation and to be the result of a good performance, higher commitment and positive attitude towards the job environment. Moreover,

Giauque et al. (2013) focus on developing the an adjusted model by including Public Sector Motivation as another characteristic of the job resources. By doing this, they put additional weight on the motivational aspect and its relationship with stress. The outcome of that model is stress: “a disruption of the equilibrium of the cognitive-emotional-environmental system by external factors“ (Lazarus & Folkman, 1984; Demerouti et al., 2001, p. 501). Their results show, that the relationship between PSM and stress is positive, so that a higher level of motivation produces a higher level of stress (Giauque et al., 2013).

Both models, the JD-R model and the ERI model, show some similarities. First of all, both models are developed to discuss the relationship between resources/demands (JD-R) and efforts/rewards and occupational stress. Secondly, both models use the same measurements (standardized questionnaire) in order to analyze this relationship. However, the positive relationship between PSM and stress was the reason to apply the adjusted version of the JD-R model. As the JD-R model has been developed 37 years ago, this research aims at supporting the need of adjustments towards the latest findings by including PSM into this model.

Until this point, this paper has reviewed the latest and most important findings regarding the relationship between PSM and stress. Most important are the findings and models about the relationship between the two variables that underline the importance of this research in this scientific field. Moreover, this rather complex construct of variables and their attributes needs further attention and backing from different case studies in order to verify or falsify the assumption of the dark side of PSM.

3.2 Hypothesis

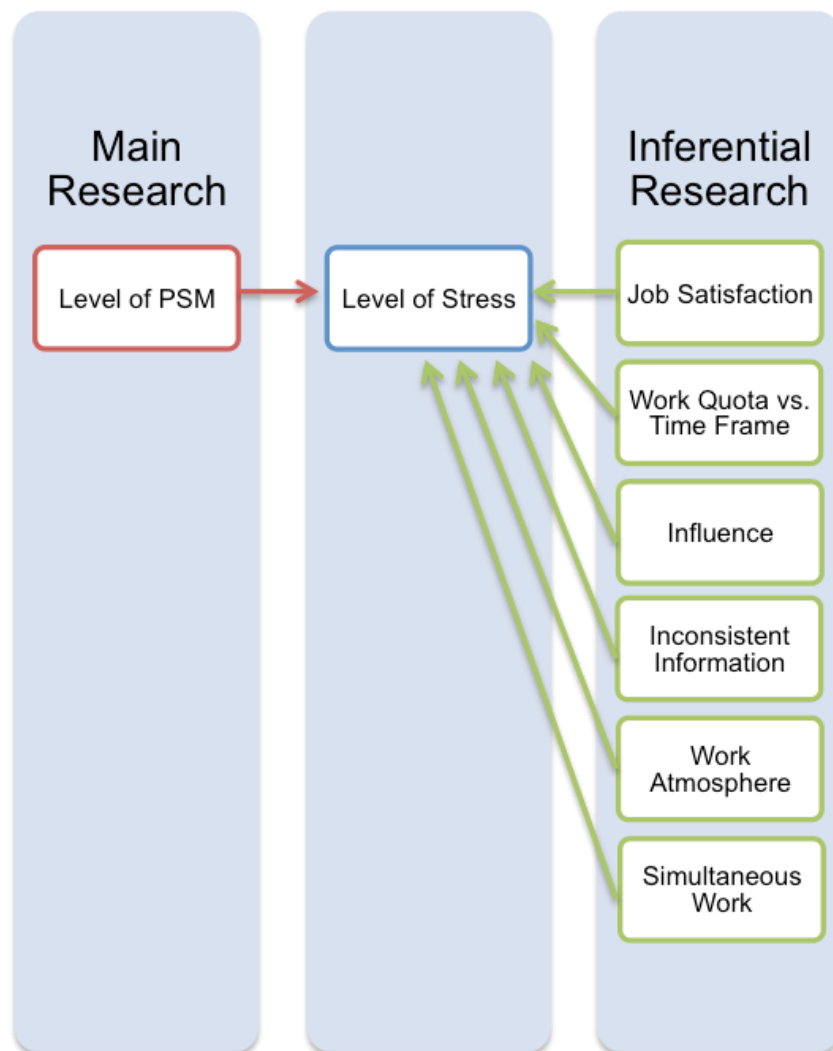
The leading hypothesis for this research is:

H1: If respondents have a high level of PSM, the level of stress also increases compared to people having a low level of PSM.

In order to test this hypothesis, the JD-R model is used as a guideline for this research. However, due to feasibility of this research project, this research concentrates on the direct relationship of

PSM and stress. The researcher is aware of the fact that other variables also might influence the dependent variable. These variables can be for example job satisfaction, work atmosphere or the ability to influence the own work tasks (explained in more detail considering the predictor variables). In order to give orientation during the paper, graphic 4 shows an overarching model that describes the research and the steps that have been taken during the process.

Graphic 4: *Research Model for this paper*



4. Methodology

The following paragraph describes the proceedings to prepare for the analysis. First of all the research design, the data collection method and the sampling method are introduced. Moreover, the instruments to measure PSM on the one hand and stress on the other hand are stated.

4.1 Research design

Besides the Self-Determination Theory, PSM is one of the most frequently used theories on motivation. Due to this fact, the researcher assumes that the assumptions originally stated by Perry and Wise (1996) are reliable and can be used in this study. Additionally, the models about stress are often used by numerous scientists and have proven its reliability and importance in the scientific field (e.g. Rainey, 2009; Houston, 2000).

Gerring and McDermott (2007) state the advantage of a case study. In most cases it is not possible to reconstruct the reality in order to see how a relationship between two or more variables exists. Even the facts that appear rather simple, like the time order of the focal variables, are not clearly measurable. Therefore, it is needed to classify numerous facts in order to allow drawing conclusions in any scientific field. First of all, a distinction between a spatial and temporal observation is needed, where temporal means to see the changes of the dependent variable as a conclusion of the independent variable while the process takes place. This direct observation differs from the spatial observation, where a number of variables equal each other in as many aspects as possible, except the one attribute that is recognized in the study. All in all it is important to state, that it is assumed that any change in Y is attributed to a change in X and all other factors are kept constant (*ceteris paribus*). If this assumption is not met for any reason, any study is needless as no conclusions can be drawn. However, it is often rather difficult to achieve a reasonable assurance in a non-experimental design. On the other hand, an experimental research design also does not protect the research from being manipulated for example by choosing a randomized or control group. In that respect, Gerring and McDermott (2007) try to support the research based on observation and contribute to the validity of this study project. Considering the matrix developed by Gerring and McDermott (2007) to classify four different categories of case studies of research, one is able to classify this present study as a research that is not able to specify when and how the relationship between the two variables has taken place, but looks at the residual of the intervention is defined as *spatial comparison*.

Thus, this study is designed to only rely on observations without any experimental influence. The affiliation between the present study and the term described by Gerring and McDermott is based on various reasons. First of all, the aspect of no definite occurring point is taken into account as one indicator for this specific category. Secondly, any other aspect of time is not superficial, because the research design does not provide the opportunity and need to have a closer look at a pre- and posttest to analyze its effects over time. Third, because an intervention has not taken place, it is not needed to divide the participant group into different groups for example to have a control group. Even though it would increase the validity and reliability of a study because it resembles an experimental design, it does not fit to the intention of this research. However, this implies the possibility that the answers of the participant are biased or that the participant has a deviant behaviour. In general, the chosen research design has the advantage that more time-consuming meetings are not needed and this type fits the purpose of this research best (Huizinga & Elliott, 1986). Besides that, no manipulation has been taken place neither on the variables, nor on the sampling groups. This correlational research design is applied in order to avoid any differing operations that appear intended or accidental (Dooley, 2009).

In order to assess data on the variables included in this research, a quantitative approach is chosen. Only closed questions are chosen in order to increase the comparability between different participants (Martin, 2006). Except for the first question and the possible answer box, all questions do have predefined answer options in order to show the agreement or disagreement of an item. Because each answer option has its own code on a scale from 1-4, 1-5, 1-6 or 1-7, it is possible to determine various statistical measurements.

In order to control for the relationship between the level of PSM and the level of stress with the exception of influence of other variables, the researcher intends to use predictor variables. Because this aspect is of great importance, it is described in a operationalization part in more detail.

All in all it is expected, that a change in the level of PSM also cause a change in the level of stress, keeping all other variables constant.

4.2 Case Selection and sampling

Considering the publications of the Federal Ministry of the Interior, 4.64 million people were working in the public sector in 2014 (Bundesministerium des Innern, 2014). Moreover,

2.766.600 people were employed under pay scale (Bundesministerium des Innern, 2014) and therefore build up 59.63% of all employees of the public sector. Furthermore, 752.358 teachers are employed in Germany (Statista¹, 2014) representing 16.21 percent of all public employees. Considering this great amount, it is comprehensible to choose this specific sector in order to represent one part of the public sector. This study puts the focus on participants working mainly as teachers that are employed at a public school. Additionally, all participants need to be of age. At first, the chosen research setting was Münster with almost 300.000 citizens in the western part of Germany. This would have made the results generalizable for the whole country, as the average population of a German city is at around 325.000 (Statistisches Bundesamt, 2014). However, when the schools were called and asked if it would be possible to use these schools as a research unit, every school principal was very pessimistic, if the teachers would actually answer the questionnaire, due to the high frequency of enquiries, as Münster has a great student body. It became apparent, that the response rate would be rather low. That fact forced the researcher to think about an alternative setting for this study. Because of the web-based questionnaire, it is possible to contact every secondary school in this city easily. As this has been done in every city, it is expected to represent each school type as best as possible. It is expected that the size of the schools is balanced out within one type and that the amount of teachers is equal. The distance between school and the researcher's working place being irrelevant, and being able to easily reach a great range of participants through the distribution via a specific and dedicated link, are additional advantages of a web-based questionnaire. The questionnaire was published on the server platform IGS Survey Server (Lime Survey).

In that respect, the researcher chose three federal states of Germany randomly and looked for cities with a size of approximately 50.000 citizens in order to avoid the phenomenon that occurred in Münster with these cities also being populated by a high percentage of students. It is expected not only to discuss the secondary school teachers of one single city, but also to relate the sample schools to the entire country and if possible also to relate to the other public sector working fields. This can easily be done due to the infrastructure of secondary schools being almost identical in every part of Germany. The chosen federal states are North Rhine-Westphalia, Lower Saxony and Bavaria. The cities are Willich, Ibbenbüren, Emden, Goslar, Passau and Schweinfurt.

Table 1: *Overview on the amount of contacted schools of the chosen six cities*

City/number of contacted schools	Hauptschule	Realschule	Gymnasium	Gesamtschule	Oberschule
Willich	1	1	2	2	-
Ibbenbüren	2	3	2	1	-
Emden	-		2	1	3
Goslar	-		6	1	8
Passau	-	2	4	-	2
Schweinfurt	1	2	4	-	-

Total = 50

As the researcher was informed by the school principals that the two schools highlighted in grey were about to close because of the building of new schools and a provisional school Principal is put in place, they were excluded from the sample.

Unterbrink et al. (2007) contribute to the fact, that it would be more interesting and more representative to include not only high schools (be: grammar school; German: Gymnasium). Therefore, also the most common secondary schools in Germany are included: secondary modern schools (German: Realschule), junior high school (German: Hauptschule) and comprehensive schools (German: Gesamtschule).

All in all, 50 school principals were informed by mail about this study. The email contained the questionnaire in a PDF format sent on approval and the request to forward the link of the study to all teachers at the school. It can be assumed, that each school has about 50 teachers on average, this questionnaire could have reached 2.500 teachers in the chosen six cities. To give a definite response rate is not possible. In total, 39 teachers participated in this study. However, three of them left the study at a later point reducing the sample to 36 participants. Because every answer in the questionnaire was mandatory, it was not possible to save and then include the already

given results. The researcher is aware of the fact, that this sample is rather small compared to the distributed questionnaire. Therefore, the results may not be generalizable in a broad range.

However, this paper will still use this data to inform the reader about PSM and stress and to interesting information based on the provided data.

4.3 Data collection method

As it is very difficult to find existing data sets saying something in particular about this variable and setting, all data will be collected originally. The data is based on a data set collected by a survey designed for this particular study. Using the work of other researchers who have determined the validity of their studies, the questionnaire is composed of four parts. The main questions are about PSM and stress. The questions on PSM are based on a questionnaire developed by Andersen et al. (2014), while stress is measured by the Perceived Stress Scale (PSS)(Cohen, 1994). Besides the questions about PSM and stress, the questionnaire contains short and not validated demographic questions. Moreover, the last part is a sample of predictor variables selected by the researcher and designed to test for correlating or influencing factors. These questions follow the Occasional Stress Index for Teachers (Balkić, 2016), but within the scope of this paper not all questions could be reproduced. Each of the components of this questionnaire is explained in the following paragraphs. The whole questionnaire can be found in the appendix. Each question is labeled with the capital letter F (for the German word ‘Frage’ “*question*”) and a continuous number.

As the case selection shows, only German cities are chosen and therefore the native language German appears to work best. In order to provide an understanding of each question asked in the questionnaire, the English translation is added for this paper in italics right below each question. The researcher did not translate the answer possibilities due to clarity in this paper and it can be assumed that the answers are self-explanatory for the most parts.

Before releasing the questionnaire, two people who have worked in the public sector did answer the questionnaire in order to verify the clarity of the content of the questionnaire and the wording. In that respect, only slight changes have taken place considering the wording in order to clearly state what is actually meant.

5. Operationalization

5.1 Assessment of the level of PSM

Within the questionnaire, the level of public service motivation is been assessed in order to see the differences of a highly motivated person in comparison to a less motivated person.

Hence, Perrys (1996) four dimensions to measure PSM are applied in this paper. Although, the dimensions developed by Perry (1996) are adjusted and tested several times, its validity and reliability is popular at this field of science and proven by numerous researchers. One result is the developed questionnaire by Andersen et al. (2014) who have taken the dimensions of Perry and prior studies of other scientists (e.g. Coursey and Pandey 2007; Andersen and Pedersen 2012) and applied them to the specific target group of teachers. Especially because they did a pilot study on that with about 60 teachers from two schools, it is expected that this study can be taken as a reliable source for the present study. Andersen et al. (2014) indicate that it would be welcome to broaden the knowledge about this topic among various countries besides Denmark (Andersen et al., 2014, p. 31) and therefore the questionnaire is open to use. Andersen et al. (2014) applied Perry's measurement scale to the questionnaire in order to make his dimensions measurable. The dimensions are: *Attraction to Public Policy Making*, *Commitment to the Public Interest/Civic Duty*, *Compassion and Self-Sacrifice* (Perry, 1996). It is often discussed how the dimensions could be interpreted and if a comparison to other studies is possible. That is why all of the dimensions are part of the questionnaire, even though the first dimension, *Attraction to Public Policy Making* is expected to be not directly applicable to secondary school teachers as it is not one of the main parts for them to identify with certain political aspects. However, as public school teachers rely on political decisions, it seemed to be useful to also ask questions about this dimension.

In the article by Andersen et al. (2014) it is not clearly stated which scale they used to measure these items. In order to collect sufficient data, a seven-point Likert scale is implemented with the response options ranging from fully disagree to fully agree. It has to be mentioned, that a five-point and seven-point scale only differ slightly (Dawes, 2008). The advantage of the seven-point scale is the increased variance of the data. The importance of a middle point of a scale is stated by Garland (1991), as it allows for a neutral option. Moreover, Garland (1991) has discovered, that a scale without a midpoint tends to result in a more negative or a more positive rating than a

scale with a midpoint does. The participant is more willing to choose a slightly more negative or positive attribute (the positive or negative tendency is content related) if the midpoint is absent. Additionally, the scale is designed to be unipolar to give the participant the chance to identify with the absence or presence of this attribute rather than to think of an identification with one of the two opposite poles and its degree. The scale is labeled with the lowest level “Stimme überhaupt nicht zu” which can also be seen as the 1 (*fully disagree*), then the numbers 2, 3, 4, 5, 6, and the label “Stimme voll und ganz zu” (*fully agree*) that can be seen as the number 7.

Graphic 5: Review on the scale of the questionnaire for PSM

* Die folgenden Fragen beschäftigen sich damit, wie Sie sich motivieren im Berufsalltag. Bitte beantworten Sie die folgenden Fragen mithilfe einer Einschätzung in wie weit Sie sich mit der Aussage identifizieren können und kreuzen Sie pro Aussage eine Antwort an.

	Stimme überhaupt nicht zu	2	3	4	5	6	Stimme voll und ganz zu
Etwas in der Gesellschaft zu verändern bedeutet mir mehr als meine persönlichen Errungenschaften.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The following paragraph is expected to gain the **full and special attention of the reader** in order to understand the following parts in its entirety: The questionnaire of Andersen et al. (2014) includes 15 questions for PSM. All questions by Andersen et al. (2014) were adopted in the exact manner or with slight adaptations considering the target group. However, due to technical problems with the IGS Server, it was not possible to collect data for questions F13, F14, F16, F17 and F19. This only became apparent during the analysis. Because of time-related bottlenecks, the study could not be repeated to also collect data on the missing five questions. The researcher is aware of the fact, that these missing questions can have an impact on the variable PSM and its relationship to stress.

Therefore, in the following paragraphs 10 items will explain the level of PSM for this study.

5.1.1 Assessment of Self-Sacrifice

Question F08 - F11 measure the dimension of Self-Sacrifice considering in how far a person identifies with this statement. One example is: “*I am willing to risk personal loss to help society*”. The answer can be chosen on a seven-point Likert scale reaching from fully disagree (1) to fully agree (7). Question F09 is adjusted in the wording which is personalized to teaching. All items of Self-Sacrifice contribute to the internal scale ($\alpha^2 = 0.701$) (see appendix 5).

5.1.2 Assessment of Compassion

The question block for compassion includes only two questions. Question F12 is adjusted to the target group of teachers. Andersen et al. (2014) included also the questions “F13: *For me, considering the welfare of others is one of the most important values.*” and “F14: *I get very upset when I see other people being treated unfairly*”. However, these questions do not provide any data concerning the technical lack. Andersen et al. (2014) developed the question “I feel sympathetic to the plight of the underprivileged”, but in order to answer this question, it is needed to go one step back to ask who are the *underprivileged* and to specify this question a little bit more. Therefore, the question F15 is asked instead. Question F12 and F15 do add up to the variable Compassion and show a weak negative reliability ($\alpha = -0.562$) (see appendix 6).

5.1.3 Attraction of Policy Making

Moreover, as stated above, attraction to policy making appears not as relevant to secondary school teachers as the other components. Due to the missing questions, this category has only one question (F18) that summarizes the general attitude towards the policymaking that affects the teacher or the school. Moreover, the question is changed from a negative wording to a positive wording in order to produce no confusion concerning the effect of double negative, and

² The Cronbach’s alpha (α) can range from 0 to 1, while 0 implies a low consistency and 1 a very high reliability of the scale. A questionnaire with a Cronbach's alpha value greater than 0.7 can be interpreted as having sufficient/good internal reliability (Tavakol & Dennick, 2011; Gliem & Gliem (2003)).

³ All reliability analyses can be found in the appendix.

to avoid biased answers (Colosi, n.d.). As it is only one item on this dimension, no reliability analysis could be applied.

5.1.4 Assessment of Commitment to the Public Interest

The last questions are concerning the commitment to the public interest. Therefore, question F20 is adjusted to refer to the latest news concerning the refugees many people consider as being problematic. In addition to the question of Andersen et al. (2014) the reference to origin is added: *“I would prefer seeing public officials respect the characteristics of each origin so that it is best for the whole community even if it harmed my interests”*. Therefore, three items build up this variable. The reliability is very weak ($\alpha = 0.534$) (see appendix 7).

By building the mean of all questions asked in this questionnaire considering PSM, one is able to develop the level of PSM that a public sector teacher has. The advantage of adding the means instead of adding to a sum is the fact, that the variable stays in the range of the scale (1-7) (Niketta, n.d.). The Cronbach's alpha of this variable is 0.599 (see appendix 8). As stated above, this value is below $\alpha = 0.7$ and therefore implies a low reliability of the scale. Against the expectations referring to the theory of Perry (1996), the scale is not sufficiently consistent and further tests are needed to be able to explain this phenomenon. However, if one considers the Item-Total Statistics, the Cronbach's Alpha would increase to $\alpha = 0.721$ if item F12 would be deleted (see appendix 9). Nevertheless, the theory cannot explain why this particular item should be taken out. However, the researcher is now aware of the fact, that this question is not clearly stated and it could be either understood as having a positive or a negative connotation. In order to ensure the internal validity of the scale, item F12 was therefore deleted. Now the scale for PSM consists of nine items and is of sufficient reliability. The new variable for PSM is labeled as PSM_y. For the full table on reliability see the appendix 10.

As the other researchers using this scale for measuring the level of PSM do not present the exact results for example for the Cronbach's Alpha, it is not possible to compare the value of this study with many missing items to others.

5.2 Assessment of the level of stress

Furthermore, the level of stress is also assessed through the conduction of this study. Although Giauque et al. (2013) define ten items to estimate stress, there is no identification of the exact questions asked for each dimension. In that respect, the researcher considered various questionnaires measuring the stress perception (Amirkhan, 2011; Cohen, 1994; Belkić, 2016). Most of them are similar in content and slightly differ in the way the questions are asked. Therefore, the questionnaire developed by Cohen, called the Perceived Stress Scale (PSS), is used as a model for the questions asked to assess the level of stress. This instrument has proven its reliability and validity among several studies and therefore is chosen for this research. The permission to use this scale is given through the author. All in all, this measurement will be helpful to analyze the level of stress. Due to the fact that the website psy.cmu.edu provides a translation of the PSS into various languages, this is an additional reason why it is applicable to this study. For this paper the German version translated by Prof. Dr. Arndt Büssing is used (Prof. Dr. Büssing, 2011). The PSS contains ten items that need to be answered on a five-point Likert scale. In order to avoid any complicating inconveniences in the analysis because of different scale types, the answer scale for stress is adjusted to be a seven-point Likert scale. The range of the Likert scale starts with the statement “Nie” (never) and ends with the statement “Sehr oft” (very often).

Graphic 6: *Review on the scale of the questionnaire for stress variable*

* Die folgenden Fragen beschäftigen sich damit, wie häufig Sie sich während des letzten Monats durch Stress belastet fühlten. Bitte beantworten Sie die folgenden Fragen mithilfe einer Einschätzung in wie weit Sie sich mit der Aussage identifizieren können und kreuzen Sie pro Aussage eine Antwort an.

	Nie	Eher selten	Selten	Manchmal	Häufig	Sehr häufig	Sehr oft
Wie oft hatten Sie sich im letzten Monat darüber aufgeregt, dass etwas völlig Unerwartetes eingetreten ist?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The internal consistent reliability of stress is very high with a Cronbach's Alpha of 0.903. However, the item F29 on being able to control irritations in life or not is increasing the Cronbach's Alpha to 0.921 because it has a low value on item-total correlation ($r = 0.163$). Additionally, Gliem & Gliem (2003) conclude that the value of the Corrected Item-Total Correlation should be at least 0.40 to represent a good correlation of the item to the rest of the scale. In the case of F29, the Corrected Item-Total Correlation is at 0.163 and therefore below

the value of 0.4. Therefore, the researcher decided to take this item out, which results in an item reliability for stress of $\alpha = 0.921$.

Moreover, from this point the variable stress consists of nine items with a slight change in the mean from 3.69 to 3.73 (see appendix 11). All in all, the chosen items are measuring stress to a sufficient reliability extent. For the full table on reliability see the appendix 12. Moreover, from this point the stress variable consists of nine items (the variable is labeled Stress_y in SPSS). Considering the studies of other researchers, it cannot be explained why the reliability value of F29 is low. Kupczik (2016) even states, that the stress hormones adrenalin and noradrenalin are released if one is not able to control irritations in life. Therefore, the relation between this item and the overall stress is given. However, in order to work with a highly reliable scale, the researcher decides to leave this item out, but is aware of the fact, that this may influence the further research.

Having technical problems at the assessment of PSM, the variable stress is not affected and could be measured in its full extent.

5.3 Assessment of control variables: Town of origin, gender, age, level of education, part/full time job, weekly hours, number of schools, and school types

Besides the questions about PSM and the PSS, the questionnaire includes the assessment of demographic variables (in the following often called control variables) as suggested by Giaque et al. (2013). Because the questionnaire is anonymous, the first question is about the town of origin (F00) of the participant. This way the researcher is able to reconcile if each city is represented in this study. The next questions are about gender (F01) and age (F02). Therefore, it is possible to see whether the age of gender does have an effect on the relationship between motivation and stress. The participants are categorized in pre-defined groups of male and female, and age groups with an age range of 10 years per category.

Question F03 is regarding the time the participant has worked as a teacher so far. Moreover, this question is taken from the OSI questionnaire for teachers (Balkić, 2016) and its importance is certain in order see if a difference whether a rather young teacher has a different perception of motivation and stress than a teacher on a senior level. However, this question has pre-defined answer categories with time frames rather than blank spaces as Balkić has written it, as it

facilitates the participant's response, and reduces one step of data handling as the participants would have been grouped according to their age anyway.

Additionally, the aspect of part-time and full-time teachers is assessed (F04). The importance of distinguishing between these two types of teachers is revealed according to Bauer et al. (2005).

Moreover, the next aspect is regarding the weekly hours that are contractually determined (F05), and the number of schools the teachers is working at (F06).

Additionally, the next question asks for the type of schools at which the teachers are salaried (F07). Therefore, the teachers from different types of schools can be seen as different units. All of these questions do have pre-defined categories to answer the question.

5.4 Assessment of predictor variables: satisfaction at the workplace, work quota, influence on the work task, clarification of work tasks, working atmosphere, and contemporaneous work

As an inspiration for these predictor variables, the questionnaire by Balkić (2016) was used. “This questionnaire is designed to assess the working conditions of teachers, with the aim of finding ways to create a healthier work environment.” (Balkić, 2016, p. 1). As this aim is similar in the study by Balkić and this present study, it is natural to use this questionnaire as an inspiration for this research. The researcher was given permission to use the questions for own purposes as long as the reference is clearly stated. All of the following questions do have the answer category “Not Specified” in order to give the participant the chance to leave this question out. This gives the researcher the possibility to avoid the possibility that a person did not just overlook the question, but intended to not answer this question. Therefore, the other answers of the questionnaires can be used as it is planned.

One indicator that measures the work satisfaction of a person quite reliably is the indicator for well-being. A question about job satisfaction (F33) was therefore included. In general, job satisfaction is measured in a single-item measure, which is acceptable because the whole construct of the other variables is specific and clear (Lee & Sabharwal, 2014).

Question number F34 reflects the issue on working overtime and if that might have an effect on the stress level of a person. Lee and Sabharwal (2014) refer to other studies that show that a difference between the younger generation and the older one concerning the attitude towards the

work-life balance is visible. It is expected that much overtime work has a negative impact on the relationship between motivation and stress. Therefore, this aspect is an important factor in this analysis. The answer section is pre-defined in order to say if it is always, sometimes, less often or objectively impossible to fulfill all tasks in the given time frame.

In order to see whether a teacher is autonomous or not, question F35 is asked. The study by Reeve (2006) shows that the degree of autonomy a teachers has, also influences the motivation and engagement of students remarkably. The participant can decide if he/she has a great, a little, not much or no influence on the own work quota and schedule.

The question (F36) about inconsistent information can give an indication on how well the school principal and the teacher work together, and about the work climate amongst the colleagues (Simon et al., 2005). The answers are categorized as: never, sometimes, occasionally, often, no comment.

Moreover, the next question (F37) is linked to the question F36 as it asks for the work climate at the school as an indicator how satisfied the participating teacher is. Kroll et al. (2011) state, that the work climate has a great effect on the performance and should be implemented in the study in order to analyze its effect on the relationship of motivation and stress. Therefore, the answer categories on how the teacher experiences the climate at the workplace are: excellent, good, satisfactory, unsatisfactory and no comment.

The last question (F38) of this questionnaire asks about the work quota a teacher has to do simultaneously. This variable is expected to be influential on the stress variable, as a teacher often has to fulfill multiple tasks for example listening, teaching and drawing, which can cause a stressful situation for the teacher and harm their health (Brante, 2009). The answer categories are the same as in question F36.

6. Data Analysis

Because no consistent data could be found about a possible categorization, the researcher decided to distribute the seven-point scale into equally sized areas in order to make assumptions about the level of PSM and also the stress level. Therefore, a person has a low level of PSM, if the total mean of all the given answers about PSM is below 2.33. A person is considered to have a high level of PSM if the mean is above 4.67 and a person is considered to have a medium level of PSM, if the value is between 2.34 and 4.66. In order to make easier comparisons within SPSS,

the researcher recoded the variable a second time. Now, 1 is categorized as being a low level, 2 is being a medium level and 3 is being a high level of PSM. The data is categorized into three items stating a value until 1,6 is low level of PSM, from that point to 2,3 is a medium level and above that it is a high level of PSM. Only 2,8 percent of the sample can be considered as having a low level of PSM, while 66,7 percent have a medium level of PSM and 33,3 percent have a high level of PSM. Therefore one can say, that a third of the teachers participating in this study are highly motivated.

The statistics program IBM SPSS Statistics 23 was used to analyze the data. First of all, the control and predictor variables inform about univariate distributions among the 36 participants. The variables F00 to F07 have an ordinal measurement, as the order of the answers is clear, but the distance between the different answers cannot be determined as exactly the same. The predictor variables age and gender are also implemented in the multiple regression analysis in order to see how they may influence stress as well.

Correlation and regression analyses are used to receive more information about the relationships between the variables. The variables PSM and stress are both interval variables. Therefore, any analysis is possible with these variables. In order to compare the *levels* of PSM and stress within themselves and with the control and predictor variables, the variables with categorized items are used (Stress_b and PSM_b).

The predictor variables have an ordinal measurement. However, as the scale to answer this question is pre-defined in intervals, variables with an ordinal measurement can often also be treated being an interval variable. In order to do the regressions analysis, it is accepted that the predictor variables are also interval variables (Dooley, 2009).

6.1 Demographic Statistics

By evaluating the questionnaires, 26 women (72,2%) and 10 men (27,8%) participated in this study. Considering the annual report of the German federal bureau of statistics, 71,4% of the teachers are female and 28,6% are male (Malecki et al., 2014). Therefore, this study can be considered quite representative regarding the gender distribution (see Table 2).

Table 2: *Frequency and percentages for the demographic variable gender*

	Frequency	Percentage (%)
Female	26	72,2
Male	10	27,8
Total	36	100

Moreover, most of the participants are between 46 and 55 years old (33,3%), followed by the age group of 25 to 35 years (30,6%), 56 to 65 years (22,2%) and 36 to 45 years (13,9%). None of the participants is below the age of 25 or above the age of 65.

As the statistic of the bureau has grouped the participants according the different age ranges as the current study, it is difficult to compare the present study with the common German statistics. However, it is apparent that the higher the age, the greater the percentage of teachers in this group. The present study shows, that the categories of teachers at the age of 25 to 35 years and 46 to 55 years are out of the common order and therefore do not match up with the statistic of the German federal bureau of statistics. However, the low percentage of 56 to 65-years-old teachers might be explained by the fact that the majority of older teachers is not accustomed to the use of web-based surveys and is using the computer less than their younger colleagues (see Table 3).

Table 3: *Frequency and percentages for the demographic variable age*

Age	Frequency	Percentage
Below 25 years old	0	0
25-35 years old	11	30,6
36-45 years old	5	13,9
46-55 years old	12	33,3
56-65 years old	8	22,2
Total	36	100

To summarize, almost every selected city is represented by some participants except Passau. In this case no teachers have answered the questionnaire. The town of origin is categorized into the six bigger cities. In the case of the naming of smaller urban districts, the researcher used geographical tools in order to reconcile the areas with the cities (see Table 4).

Table 4: *Distribution concerning the town of origin of participating teachers*

Town of origin of the participant	Total number of participating teachers
Willich	6
Ibbenbüren	7
Emden	2
Goslar	17
Passau	-
Schweinfurt	4

The question regarding the time the participant works as a teacher shows that 63.9% (23 participants) of the participants have worked more than 11 years in this job. 19.4% (7

participants) have been teachers for one to five years, 13.9% (5 participants) for six to ten years and one participant (2.8%) has worked for less than one year as a teacher (see appendix 3).

Out of the 36 participants, 29 people are working full-time, while only 6 participants are working part-time. One participant is not specified.

Moreover, the majority of teachers (61.1%) works 21 to 30 hours a week. Only 16.7% work 11 to 20 hours, 11.1% work 31 to 40 hours and one participant each (2.8%) works 6 to 10 hours or more than 41 hours per week.

More than 90% of the teachers work at only one school, while 5.6% work at two schools and 2.8% work at three schools. This shows that many teachers can concentrate on their one working place and do not have to switch between the workplaces (see appendix 4).

Considering the school type, most participating teachers are working at a Hauptschule (15 participants). Whereas Realschule and Gesamtschule is the working place for ten teachers each. Only eight participants chose a Gymnasium (see appendix 14). Because this question was the only multiple choice question, it can also be analyzed which school types are mostly chosen together as two workplaces at the same time and which school type is mostly used as one working place only. Therefore, nine teachers are working at a Gesamtschule only, followed by eight teachers working at a Gymnasium only. Additionally, three teachers are working at a Hauptschule and the same amount works at a school type that is not listed here for example because it is an amalgamation of the school type Realschule and Hauptschule. This aspect can also be explained by the fact that eight participants state that they are working at a Hauptschule and Realschule at the same time. Because this number is greater, than the number of participants indicating that they are working at more than one school, the assumption about the amalgamation is supported. It has to be stated, that this data shows that no Gymnasium teacher also works at another school. This is also visible in the annual report of the German federal bureau of statistics that published the *Bildung und Kultur - Allgemeinbildende Schulen* Report (2015). Gymnasium do have the highest rate of full-time teachers working there. 42,2% of the teachers in Germany work at a Gymnasium.

6.2 Descriptive Statistics

6.2.1 Level of PSM and Level of stress

Table 8: *Descriptive statistics of the level of PSM and the level of stress: Minimum, Maximum, Mean, Standard Deviation, and Skewness*

	Minimum	Maximum	Mean	Std. Deviation	Skewness
PSM	1	3	2.44	0.558	-0.293
Stress	1	3	2.17	0.655	-0.18

Note: Items are categorized into low (1), medium (2) and high (3) level

As indicated, every level is represented on a three-dimensional scale. The average level of PSM has a value of 2.44, which is slightly higher than the medium value of 2.34. The level of stress is almost right at the middle of the scale and therefore is concentrated at a medium level. The standard deviation for PSM is 0.558 and for stress 0.655. The skewness of both variables shows that there is a negative slope. Considering the quartiles, the values of the 25th and 50th quartiles are close to the mean, while the 75th quartile has the value 3. This means, that at least 50 percent of the sample has a medium PSM level as well as a medium stress level (see appendix 15).

6.2.2 Gender and stress

Considering gender and stress, it has to be stated that male teachers do have a lower level of stress than women. While only 10 percent of the male participants have a high level of stress, almost one third (30.8%) of the women have a high level of stress. This fact is supported by the American Psychological Association (n.d.). As the Chi-Square of this correlation has a value of 4.985, which is above 0.3 and can be considered as being significant (see appendix 16).

6.2.3 Age and stress

The highest level of stress can be found at the age category of the 36 to 45-year-old teachers (40%), followed by the 25-35-year-olds (36,4%). The trend is visible, that the higher the age, the lower the stress level, a negative correlation is therefore expected (see appendix 17).

6.3 Inferential Statistics

6.3.1 Quality Criteria

At the beginning, the main quality criteria are analyzed in this paragraph. Firstly, any stressors can influence the implementation objectivity. In that respect it is impossible to provide the same conditions for each participant in this study considering the chosen research design. Additionally, the researcher does not know the circumstances the teacher has to cope with. Therefore, it not possible to state if this criterion may be met or not. The participant could be susceptible to the personal mood or got interrupted when filling out the questionnaire. In order to obtain a high degree of implementation objectivity, the standardized conditions are attributed to a self-completion method. Any response bias would increase in the case of an interview or an inquiry.

Secondly, the evaluation objectivity is based on the act of implementing the data from the IGS Server to SPSS and on the coding of the items. Because of a quantitative study, no spoken or individually written item had to be translated into a numeric code. The only exception is the town of origin that is a string variable. However, the only purpose of this question is to carry out an analysis on the distribution of the participants in the aspect of origin, which has no more effect on the aspect of objectivity. Moreover, the advantage of the IGS survey is to have an automatic transformation of the given answers to a numeric code that has been determined in advance. Each answer option has the capital letter A and the specific answer option labeled with a number. By implementing the answers into SPSS, the researcher could easily recode the answers by deleting the capital letter A in order to arrive at single numbers the statistic program is able to read.

In order to ensure high implementation objectivity, the researcher has put the focus on a selection of closed questions.

Thirdly, the interpretation objectivity is cannot easily be analyzed because of the fact that only one researcher is involved in this study and no other scientist interprets the results. Therefore, the researcher tries to describe any decisions, benchmarks, comparative values (e.g. mean or standard deviation) as detailed as possible in order to guarantee a high interpretation objectivity. Additionally, the description of the used scales is depicted in detail.

The aim of the study is to generalize the findings of this sample to, for example, the population of Germany. However, because the sample is rather small, interpretations are difficult to make. In that respect it is natural to state that the sample did not happen by chance.

In order to either support or reject the hypotheses, a simple linear regression analysis is carried out. Additionally, within a hierarchical regression analysis, the predictor variables are included. Therefore, one can compare for example women and men, age, working time etc. toward the dependent variable stress. Moreover, a multiple regression analysis should measure how stress is affected and which variable contributes the most to this variable. Therefore, predominantly the regression line is considered.

6.3.2 Factor Analysis

The theory indicates that four dimensions contribute to the variable PSM. Therefore, a factor analysis is carried for the variable PSM.

6.3.2.1 Factor Analysis of PSM

Including all items of PSM, this factor analysis shows if all items fit together on one scale. The Kaiser-Meyer-Olkin Measure (KMO) is at 0.666 and therefore the variable has a medium suitability. As the sample size is small, an interpretation of the correlation matrix is not applicable. Looking at the values of the correlation matrix, one has no insight into the relationships of the items, as they rank from -0.003 to 0.683 (see appendix 18). The anti-image correlation shows (MSA-index), that all items are above the value of 0.5 except F19, which has a value of 0.484. Because all the values are considered as being at a medium strength (the highest is 0.761), this does not prevail upon the researcher to extract this item because of the low MSA value. Surprisingly, the item F12 does not stand out in particular.

The total variance explained table shows, that three items would be sufficient to explain the variable. With the three items, 6.816% of the variable PSM can be explained.

In the case of PSM, three components are developed by SPSS.

The Component Matrix shows three columns that predict that there are three subgroups subordinate to PSM. The first column includes F22, F09 and F10 with a similar value of about 0.7. Considering the content, they all concern serving the public with their work. However, for the other items and categories there is no theoretical explanation to derive. Therefore, the

theoretical distribution into four components cannot be fully supported. In that respect the causes will be discussed in the discussion part.

6.3.2.2 Factor Analysis of stress

The result of this analysis supports the assumptions of the reliability analysis that item F29 should be excluded. Additionally, no different scales are portrayed, as the theory suggests (see appendix 19).

6.4 Linear regression of PSM and stress

In order to add value to the analysis, the correlation is followed by a linear regression of the level of PSM and the level of stress. Therefore, the impact of the PSM level on the stress level can be tested by observing the latter while increasing the former by one (e.g. from low to medium). As the sample size is not that big, the results have to be interpreted with caution.

Considering the unstandardized coefficient, the level of stress decreases by -0.876 on average, if the level of PSM increases by one unit. The intercept of the y-axis is at 7.587 (at SPSS called the 'constant') (see appendix 20). This means, that if a person has no stress, the motivation would be at a level of 7.587. However, if one refers to the original range of the scale, the maximum is 7 and therefore above the possible maximum. But because in the dataset no case is associated with the value of PSM being 0, this appears to be odd.

In order to summarize this model, one can say that 42.4 percent (value of the R Square = 0.424) of the variability of the level of stress can be explained by the level of PSM. Therefore, one can state that it is a very meaningful predictor. However, because of the small sample size, it is better to look at the adjusted R Square that has a value of 0.383 and therefore 38.8 percent of the variance in stress can be explained by PSM.

Hypothesis 1 can be rejected, as the relationship between the level of PSM and the level of stress is negative instead of positive as expected.

Table 9: *Summary of the linear regression analysis between the level of PSM and the level of stress*

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	7.587	1.135	-0.651	6.686	0.0
PSM	-0.876	0.273		-3.212	0.006

R=0.651, R²=0.424, Adjusted R²=0.383, Std. Error=0.754

Note: The scale of PSM and stress is ranging from 1 (totally disagree) to 7 (totally agree)

6.5 Linearity of PSM & Stress

The scatterplots show information about the linearity and homoscedasticity of the variance. In the case of PSM and stress, the scatterplot shows a randomized pattern so that linearity is given as well as homoscedasticity (see appendix 21).

6.3. 5 Predictor variables and stress

In order to add value to the analysis, the predictor variables are included into a linear regression. Therefore it can be tested if stress is also affected by other variables besides PSM. As the sample size is not that big, any interpretation has to be made with caution.

In order to summarize this model, one can say that 72.4 percent (value of the R Square = 0.724) of the variability of the level of stress can be explained by the level of PSM and the other control variables. Therefore, one can state that all included independent variables are very meaningful predictors. However, because of the small sample size, it is better to look at the adjusted R Square that has a value of 0.482 and therefore 48.2 percent of the variance in stress can be explained by the independent variables.

In order to present more detailed results, the researcher will perform a linear regression with each of the predictor variables separately in order to conclude how each of them influences stress and can explain the phenomenon of stress. Furthermore, cross-tabs are used to support this analysis. Therefore, the researcher will work with cross-tabs and linear regressions in order to see whether the predictor variables are also related to stress or not. In order to increase the internal validity, the predictor variables are taken into account in this study. Ignoring these variables can lead to confounding variables and can bias the whole relationship of the main variables. Until the predictor variables are tested, they need to be eliminated in order to avoid an error if another factor influences the dependent variable or the relationship between the independent and dependent variable. In that respect, the predictor variables are tested for internal correlation or cover similar attributes.

6.6 Cross-Tabs and linear regression with predictor variables

6.6.1 F33: Job Satisfaction

For the cross-tabs, each of the predictor variables is included separately into the model. For stress the variable Stress_b is used which has categorized items that range from low, medium to high level of stress. In the case of F33, it is apparent that people with a low level of stress like their job the most. All in all, one can say that the individuals with a low level of stress do like their job either much or very much. Regarding the participants with a medium level of stress, no teacher does not like their job at all. However, of the teachers with a high stress level, the majority scores at the lower end of the scale. Moreover, one can state that 24 out of the 36 participants are satisfied with their job, while 12 are not.

As the sample size is not large enough to provide enough data for every cell of the matrix, the Chi-Square is not free for interpretation. However, the significance can provide insights that can be used for interpretation. As the significance in this relationship has a value of $p=0.25$, one can state that it is not significant. Moreover, it is not possible to provide any information about the causality of these two variables.

6.6.2 F34: Work quota vs. provided time frame

Considering the evaluation of the work quota and provided time frame, the majority of teachers states, that it is not possible to fulfill all tasks in the provided time frame. In general, 66.7 percent do at least struggle somewhat to fulfill the work quota in the time available. A slight trend is visible, indicating that teacher with lower stress levels are more likely to be able to fulfill all tasks, whereas to participant of this category states that they are unable to fulfill the tasks in the time frame available. The significance of the ANOVA-table shows a value of $p=0.282$, which is much higher than the limiting value of 0.05. Also the linear regression shows, that only 14 percent of the variance of stress can be explained by F34.

6.6.3 F35: Influence on own work quota and schedule

In general one can report that the majority of teachers states that they have a little bit or not much influence on their own work quota and schedule. In total 69,4 percent are in the center of the scale. Considering the adjusted R Square, this variable cannot explain much of the stress variable, as the value of the R Square is quite low with 0.057. Also, the significance is very low. Even though the researcher has not compared the beta-value (0.291) of this regression to others, one can say that this variable does not have much impact in the relation to stress.

6.6.4 F36: Get inconsistent information

Similar to variable F36, the majority of teachers scores at the medium spectrum of the scale. Moreover, 72.2 percent of the teachers state that they get inconsistent information sometimes or occasionally. Moreover, the significance level of Pearson Chi-Square shows that this variable is significant (0.01). Considering the adjusted R Square, 19.1 percent of stress can be explained by F36. Also the significance level of the linear regression shows, that this variable should be considered as being relevant in this relationship.

6.6.5 F37: Work atmosphere

In general, one can predict that the participants having a low level of stress state that the working atmosphere is at least good or excellent, while the teachers considered as having a medium stress level are mostly distributed around the a “good” atmosphere, with some above (stating it is

excellent) and some below (stating it is satisfactory). Only 2.8 percent think they are working in an insufficient work atmosphere. However, the significance of the Chi-Square is slightly above the norm of 0.05. The adjusted R Square is not the highest compared to the other predictor variables. However, this variable explains 16.9 percent of the variable stress and is highly significant considering the significance value of the linear regression analysis.

6.6.6 F38: Simultaneous work

The last predictor variable considered the work a teacher has to do simultaneously. A clear statement is the fact that at least every participant has to do multitasking sometimes, while the majority has to do it often. Every category of level of stress has the highest distribution on the highest level of simultaneous work. However, the significance of the Chi-Square has a value of 0.429 which is very high and cannot be considered as being significant in any way. Also the linear regression analysis shows that the adjusted R Square has a very low explanatory power. Also the significance in this analysis is almost the doubled value of the other significance item and therefore does not have an impact on stress.

As one cannot clearly state if the beta value is high or low in this relationship, it is advisable to compare the standardized b-coefficients to interpret the strength and direction of the variables. In general, one can state that the higher the beta value, the better the independent variable is able to explain the dependent variable. In that respect it becomes apparent that four of the six variables show a beta value of around 0.45. F33 (0.471), F34 (0.405), F36 (0.463) and F37 (0.439) can be considered as playing a significant role in affecting the level of stress. Therefore, it is advisable to consider these variables as well as the level of stress.

6.7 Multiple Regression Analysis

In order to reflect the differences to the model without confounding variables, a hierarchical regression analysis is performed. The demographic variables age and gender are included first.

In order to consider the internal correlation, the variance inflation factor (VIF) is considered. The highest value of the VIF is at 1.89 and therefore none of the variables have multicollinearity (see appendix 22)(O'Brien, 2007).

It is disputed, if a multiple regression should be run, if the sample size is low. In order to predict how many cases are needed to do a multiple regression analysis, Green (1991) established this formula (to check for R Square) $N \geq 50 + 8(k)$, where N is the number of cases and k the number of independent variables. For the beta weights, Green (1991) established the formula $N \geq 104 + k$. As this research contains six independent variables labeled as predictor variables besides the main independent variable PSM, for the interest of R Square a sample size of 106 cases is needed. As this is not the case no definite interpretations about any estimates can be made.

However, the researcher still does a multiple regression analysis to find out if any differences can be reported. In the first step, the variables gender and age are included. In the second step, the predictor variables F33-F38, and the variable to measure PSM is included in the third step. For this analysis the variable ranging from 1 to 7 is included.

Table 10: *Hierarchical Regression of the demographic variables gender and age, the predictor variables F33-F38 and the independent variable PSM*

Predictor	Block 1 β	Block 2 β	Block 3 β
Block 1: Demographic Variables:			
Gender	-0.162	-0.103	-0.106
Age	-0.293	-0.2.77	-0.311
Block 2 and 3:			
R ²	0.159	0.544	0.583
Adjusted R ²	0.108	0.409	0.439
Sig.	0.057	0.003	0.002
F	3.127	4.022	4.042

In this step, the R Square value is considered in order to represent the variability in the dependent variable stress. The change of R Square explains the predictive power the model gains by adding all variables that influence stress. Therefore, considering Block 3, the model can now explain 58.3 percent of the variability of stress.

Especially the level of significance changes from being insignificant in the first block to being highly significant in the last block. However, it appears that gender and age do not influence the level of stress in the model compared to all other variables.

6.8 Correlation Analysis: Level of PSM and level of stress

Because the study is designed to provide data on the relationship of PSM and stress, where the research question and hypothesis assume that PSM is the independent variable and stress the dependent variable, the researcher plans to test the correlation of the two main variables with the measurement of Pearson. The advantage of Pearson is that on the one hand, the strength of the relationship can be measured, but on the other hand also the direction. The value ranks from -1 (high negative correlation) to 0 (no correlation) to 1 (high positive correlation).

For the correlation, the variables Stress_y and PSM_y are used. The value of Pearson is -0.651 what indicates a moderate correlation that is negative. This means that if PSM increases by one unit, stress decreases by one unit. The value of the 2-tailed significance indicates, that it is highly significant as the p-value is 0.006 and therefore is below 0.01. As a consequence, this means that the chance to have this kind of correlation is below 1/100 (Fenton & Neil, 2012) (see appendix 23).

7. Discussion

The level of PSM is based on the four dimensions developed by Perry and Wise. For this paper, PSM was assessed through ten questions of the questionnaire, which were derived from other scientists, but especially from Andersen et al. (2014). The factor analysis has shown that the four dimensions of PSM are not specifically visible and therefore the variable is treated as one united variable. Moreover, the reliability analysis has shown that one item (F12) does not fit the scale

and therefore is not included for measuring the level of PSM. By doing this, the internal validity of the scale is given. In general, the data was divided into three different levels: high, medium and low level of stress. All in all one can state that at least 66.7 percent of the sample do have medium level of motivation. Moreover, one can see that much more teachers with a high and medium level of PSM participated in this study compared to teachers having a low level of PSM. In that respect, one can state that the majority of teachers is highly motivated and teaches the students with a high level of enthusiasm. It seems that the conditions of the job are good enough to keep the level of motivation high. As the regression analyses have shown, a higher level of PSM leads to a lower level of stress. In that respect it is important to support the teachers with various incentives to keep the level of PSM high in order to lower the burnout-rates in the long-term. As intrinsic factors play an important role, one could provide more possibilities to get promoted or to get more responsibilities. But the school principal can also provide extrinsic incentives by a higher salary or possibilities to attend at further education (Bickenbach & Soltwedel, 1996).

The data on the stress level has been conducted through ten questions based on the Perceived Stress Scale developed by Cohen (1994). The data shows that some of the participants have a high level of stress, others have a low level of stress. In general, 30 percent have a low level of stress and 25 percent have a low level of stress. Studying the different levels of stress, it becomes visible that women are more stressful than men. As much more women participated in this study, the results can be biased. However, as the overall statistics show in Germany more women are teachers and therefore the results can be representative. Even though many other researchers have also proved this phenomenon, it is still an issue among female teachers. In that respect it would be very interesting why this actually is the case. In that respect, future researchers could specialize their research on this issue in order to address each member of the society in the best way possible.

8. Results and recommendations for future research

This research has the aim to find out more about the relationship between the level of motivation and stress. This is of great importance, as the latest research shows, that the findings are contradictory and the scientists call for more insight into this topic. As only a minority follows

the approach stating that both variables are positively related, the older theories state that the level of stress increases, if the level of PSM decreased. But what if PSM is not the great force that makes everything better but instead has a dark side? This approach has been followed through this paper to contribute to the knowledge about relationship between PSM and stress.

In general, for this research data was collected among secondary school teachers via an online questionnaire. Apparently, the sample was rather small compared to the number of contacted participants. Therefore, any conclusions and interpretations must be handled with caution. The reasons why the sample is that small are only speculations that may help future researchers to improve this fact. The researcher of this study chose to do a web-based questionnaire. However, as many studies show, many teachers are at an advanced age and might not be as used to the work with a computer as a younger generation is. Therefore, it might be the case that another instrument for example a printed version of the questionnaire would have lead to a higher response rate. Moreover, the researcher had to deal with the fact that many schools are preferred in the sampling choice which leads to the fact that they get so many requests to participate at a study that they cannot answer them all or even refuse to accept the study. The researcher was aware of this difficulty introduced by the first sample choice of Münster. However, this might have led to the fact that the school principals refused to give their permission or to pass the questionnaire on the teachers. Another reason could be the tight schedule for teachers because of final exams at this time of the year. Additionally, the time to respond was rather short, allowing the teachers only 10 days to fill out the questionnaire. In order to improve the sample size, it may be better to go to the schools personally and to hand out printed versions of the questionnaire. One could also think of including teachers from elementary schools and private schools in order to compare the findings within the different working sectors. In addition, one could also send even more emails with a short reminder in order to put special attention on the participation. Furthermore, the possibility to win for example a voucher if one participates could increase the participant rate even more.

However, based on the provided data, the researcher is able to make a clear statement considering the relationship between the level of PSM and the level of stress. Firstly, considering this sample, there is a relationship between the two variables. Secondly, against the expectations, the relationship is negative. This contributes to the overarching theories that have been developed by many researchers in the last centuries. This has been proven within a linear

regression analysis. Therefore, the dark side of PSM is more brightening than darkening. Thirdly, one can state that women have a higher level of stress than their male counterparts. Moreover, it is apparent that the teachers aged between 36 and 45 have the highest level of stress compared to the teachers from any other age group. Fourthly, PSM is not the only variable that affects stress. Also other variables, like job satisfaction, influence on the own work quota or schedule, inconsistent information about work quota and the work atmosphere, have a significant influence on the level of stress.

Considering the questions within the questionnaire, one could improve the first question about the town of origin. In that respect the researcher was able to reconcile the given city names to the paramount cities. However, the researcher is aware of the fact that “town of origin” might be a little bit unclear in the fact, that the participants can be born in a different city as they live in today. In that fact, it would have been more distinct to ask where the participant lives now in order to reconcile the place of residence with the location of the school.

Moreover, the intended exclusion of one item of the PSM scale (F12) and stress scale (F29) show that for this case the scales do not fit the variable perfectly, even though many researchers have used them before. At this point of time the theory cannot explain why the scales of PSM and stress need to be adjusted. In order to prove this, further research is needed regarding this particular issue, especially to make clear assumptions whether it is because of the small sample size or if the scale has no great internal consistency.

Moreover, in terms of feasibility of this research paper, it was not possible to focus on the school types of each participant more closely. As the data shows, all of the teachers working at a Gymnasium only work at this one school. It would be interesting to know why many other teachers working for example at a Realschule can also work at a Hauptschule while teachers of a Gymnasium do not. Reasons for this might be that the students of a Gymnasium need more have higher demands academically. However, it is expected that teachers working at a lower school type (considering the level of education possible to achieve at this school) do need more pedagogical support which also needs much work effort. Considering the level of stress, no difference between the different levels of schools is expected.

As expected, most people state to have a medium level of PSM and a medium level of stress. Therefore it is rather difficult to make consistent statements about the relationship between both variables. Again, because the sample size is very small, it is difficult to judge whether the

relationship stated is attributed to an individual case or if it is generalizable for a whole sector or even for the whole society. However, each model showed, that PSM does have an impact on stress and it is important to consider it while analyzing stress. The researcher would have liked to give more insights on the actual relationship and also if the relationship itself is influenced by any other variables (e.g. moderating variables). By extending the research model, it could be interesting for future research to not only analyze the direct relationship between the level of PSM and stress, but also to consider intervening variables.

A. Literature

Amirkhan, J. (2011). Stress Overload: A New Approach to the Assessment of Stress. *American Journal Of Community Psychology*, 49(1-2), 55-71. <http://dx.doi.org/10.1007/s10464-011-9438-x>

Amt für Schule und Soziales,. (2015). *Schulstatistik 2015/2016* (1st ed., pp. 1-89). Münster: Amt für Schule und Soziales. Retrieved from https://www.muenster.de/stadt/schulamts/pdf/Schulstatistik_2015_2016.pdf

Arnetz, B., Lucas, T., & Arnetz, J. (2011). Organizational Climate, Occupational Stress, and Employee Mental Health. *Journal Of Occupational And Environmental Medicine*, 53(1), 34-42. <http://dx.doi.org/10.1097/jom.0b013e3181ff05b>

Baard, P., Deci, E., & Ryan, R. (2004). Intrinsic Need Satisfaction: A Motivational Basis of Performance and Well-Being in Two Work Settings¹. *J Appl Social Psychol*, 34(10), 2045-2068. <http://dx.doi.org/10.1111/j.1559-1816.2004.tb02690.x>

Bauer, J., Stamm, A., Virnich, K., Wissing, K., Müller, U., Wirsching, M., & Schaarschmidt, U. (2005). Correlation between burnout syndrome and psychological and psychosomatic symptoms among teachers. *Int Arch Occup Environ Health*, 79(3), 199-204. <http://dx.doi.org/10.1007/s00420-005-0050-y>

Belkić, K. (2016). *OSI for teachers questionnaire*. Stockholm.

Bickenbach, F. & Soltwedel, R. (1996). *Freiräume schaffen - Motivation stärken - Potentiale fördern: Bausteine partizipativer Führung und Unternehmensorganisation*. Retrieved 29 June 2016, from <https://www.econstor.eu/bitstream/10419/864/1/193220121.pdf>

Breucker, G., Jürgens-Scholz, B., Sochert, R., Weber, V., & Mißler, M. (2014). *Kein Stress mit dem Stress* (1st ed., pp. 1-12). Berlin: Initiative Neue Qualität der Arbeit. Retrieved from http://www.inqa.de/SharedDocs/PDFs/DE/Publikationen/psyga-kein-stress-mit-dem-stress-qualitaetskriterien-bgm.pdf?__blob=publicationFile

Bogg, J., & Cooper, C. (1995). Job Satisfaction, Mental Health, and Occupational Stress Among Senior Civil Servants. *Human Relations*, 48(3), 327-341. <http://dx.doi.org/10.1177/001872679504800306>

Brante, G. (2009). Multitasking and synchronous work: Complexities in teacher work. *Teaching And Teacher Education*, 25(3), 430-436. <http://dx.doi.org/10.1016/j.tate.2008.09.015>

Brewer, G., Selden, S., & Facer II, R. (2000). Individual Conceptions of Public Service Motivation. *Public Administration Review*, 60(3), 254-264. <http://dx.doi.org/10.1111/0033-3352.00085>

Bright, L. (2008). Does Public Service Motivation Really Make a Difference on the Job Satisfaction and Turnover Intentions of Public Employees?. *The American Review Of Public Administration*, 38(2), 149-166. <http://dx.doi.org/10.1177/0275074008317248>

Butz, A. (2015). *Künstliche Intelligenz - Mensch ist durch Kreativität überlegen*. *Deutschlandradio Kultur*. Retrieved 19 March 2016, from http://www.deutschlandradiokultur.de/kuenstliche-intelligenz-mensch-ist-durch-kreativitaet.1008.de.html?dram:article_id=308840

Chen, C., & Hsieh, C. (2015). Knowledge sharing motivation in the public sector: the role of public service motivation. *International Review Of Administrative Sciences*, 81(4), 812-832. <http://dx.doi.org/10.1177/0020852314558032>

Chowhan, J., Zeytinoglu, I., Denton, M., & Plenderleith, J. (2013). Understanding the Mediating Role of Symptoms of Stress on the Perceived Access to Training and Job Satisfaction Relationship. *BMS*, 2(1). <http://dx.doi.org/10.11114/bms.v2i1.941>

Cohen, S. (1994). *Perceived Stress Scale*. *Mindgarden.com*. Retrieved 7 June 2016, from <http://www.mindgarden.com/132-perceived-stress-scale#horizontalTab1>

Colosi, R. Negatively Worded Questions Cause Respondent Confusion. *ASA Section On Survey Research Methods*, 2896-2903.

Czerwenka, K. (1996). Belastungen im Lehrerberuf und ihre Bewältigung. *Bildung Und Erziehung*, 49(jg). <http://dx.doi.org/10.7788/bue-1996-jg24>

Danner, F., & Lonky, E. (1981). A Cognitive-Developmental Approach to the Effects of Rewards on Intrinsic Motivation. *Child Development*, 52(3), 1043. <http://dx.doi.org/10.2307/1129110>

Dawes, J. (2008). Do Data Characteristics Change According to the Number of Scale Points Used ? An Experiment Using 5 Point, 7 Point and 10 Point Scales. *International Journal Of Market Research*, 51(1), 1-19. Retrieved from http://papers.ssrn.com/sol3/Papers.cfm?abstract_id=2013613

Deci, E., & Ryan, R. (1985). Intrinsic Motivation and Self-Determination in Human Behavior. *Contemporary Sociology*, 17(2), 253. <http://dx.doi.org/10.2307/2070638>

Dooley, D. (2009). *Social Research Methods* (4 ed.). New Jersey: Pearson Education Limited.

Eid, M., Gollwitzer, M., & Schmitt, M. (2010). *Statistik und Forschungsmethoden*. Weinheim: Beltz.

Ellguth, P. & Kohaut, S. (2011). Der Staat als Arbeitgeber: Wie unterscheiden sich die Arbeitsbedingungen zwischen öffentlichem Sektor und der Privatwirtschaft?. *Industrielle Beziehungen - Zeitschrift Fuer Arbeit, Organisation Und Management*, 18.

Evers, A., Frese, M., & Cooper, C. (2000). Revisions and further developments of the Occupational Stress Indicator: LISREL results from four Dutch studies. *Journal Of Occupational And Organizational Psychology*, 73(2), 221-240. <http://dx.doi.org/10.1348/096317900166994>

Faculty of Behavioural Science at the University of Twente. (2012). *Protocol for assessing the ethical permissibility of proposed research by the Faculty of Behavioural Sciences at the University of Twente* (BFD-GW/2012-427/pc). Retrieved from <https://www.utwente.nl/en/organization/structure/faculties/bms/research/forms-and-downloads/rules-ethics-research.pdf>

Fenton, N. & Neil, M. (2012). *Risk assessment and decision analysis with Bayesian networks*. Boca Raton: Taylor & Francis.

Garland, R. (1991). The Mid-Point on a Rating Scale: Is it Desirable?. *Marketing Bulletin*, 66-70. Retrieved from http://rangevoting.org/MB_V2_N3_Garland.pdf

Gebauer, K. (2000). *Stress bei Lehrern*. Stuttgart: Klett-Cotta.

Giauque, D., Anderfuhren-Biget, S., & Varone, F. (2013). Stress Perception in Public Organisations: Expanding the Job Demands-Job Resources Model by Including Public Service Motivation. *Review Of Public Personnel Administration*, 33(1), 58-83. <http://dx.doi.org/10.1177/0734371x12443264>

Giauque, D., Ritz, A., Varone, F., & Anderfuhren-Biget, S. (2011). Resigned but satisfied: The negative impact of public service motivation and red tape on work satisfaction. *Public Administration*, 90(1), 175-193. <http://dx.doi.org/10.1111/j.1467-9299.2011.01953.x>

Gliem, J. & Gliem, R. (2003). Calculating, Interpreting, and Reporting Cronbach's Alpha Reliability Coefficient for Likert-Type Scales. *Midwest Research-To-Practice Conference In Adult, Continuing, And Community Education*.

Green, S. (1991). How Many Subjects Does It Take To Do A Regression Analysis. *Multivariate Behavioral Research*, 26(3), 499-510. http://dx.doi.org/10.1207/s15327906mbr2603_7

Hamann, D., & Foster, N. (2014). An Exploration of Job Demands, Job Control, Stress, and Attitudes in Public, Nonprofit, and For-Profit Employees. *Review Of Public Personnel Administration*, 34(4), 332-355. <http://dx.doi.org/10.1177/0734371x13491119>

Harvard Health Publications,. (2011). *Understanding the stress response*. Harvard Health Publications. Retrieved 13 April 2016, from <http://www.health.harvard.edu/staying-healthy/understanding-the-stress-response>

Houston, D. (2005). "Walking the Walk" of Public Service Motivation: Public Employees and Charitable Gifts of Time, Blood, and Money. *Journal Of Public Administration Research And Theory*, 16(1), 67-86. <http://dx.doi.org/10.1093/jopart/mui028>

Jehangir, M., Dr. Kareem, N., Dr. Khan, A., & Tahir Jan, M. (2011). *Interdisciplinary Journal Of Contemporary Research In Business*, 3(7). Retrieved from http://www.academia.edu/1157712/Effects_of_Job_Stress_on_Job_Performance_and_Job_Satisfaction

Johnson, J., & Hall, E. (1988). Job strain, work place social support, and cardiovascular disease: a cross-sectional study of a random sample of the Swedish working population. *Am J Public Health*, 78(10), 1336-1342. <http://dx.doi.org/10.2105/ajph.78.10.1336>

Kamdron, T. (2015). Work Motivation: Relationships with Job Satisfaction, Locus of Control and Motivation Orientation. *International Journal Of Liberal Arts And Social Science*, Vol. 3(No. 6), 125-148. Retrieved from http://www.ijlass.org/data/frontImages/gallery/Vol._3_No._6/13._125-148.pdf

Kroll, L., Müters, S., & Dragano, N. (2011). Arbeitsbelastungen und Gesundheit. *GBE Kompakt*, 2(5). Retrieved from <http://edoc.rki.de/series/gbe-kompakt/2011-10/PDF/10.pdf>

Kupczik, I. (2016). *Psychologie: Warum ärgern wir uns so häufig? Apotheken Umschau*. Retrieved 23 June 2016, from <http://www.apotheken-umschau.de/Psyche/Warum-aergern-wir-uns-so-haeufig-171667.html>

Karasek, R. (1979). Job Demands, Job Decision Latitude, and Mental Strain: Implications for Job Redesign. *Administrative Science Quarterly*, 24(2), 285. <http://dx.doi.org/10.2307/2392498>

Karasek, R., & Theorell, T. (1990). Healthy work: stress, productivity, and the reconstruction of working life. *Applied Ergonomics*, 23(5), 352. [http://dx.doi.org/10.1016/0003-6870\(92\)90320-u](http://dx.doi.org/10.1016/0003-6870(92)90320-u)

Kolk, H. (2015). *A short guide to asking research questions, to hypothesis construction and to basic data analysis using crosstabs*. Presentation, Twente. unpublished.

Kolk, H. (2016). *Microlecture 6 1 Measurement level of Variables 20150812*. Presentation, University of Twente. unpublished.

Kyriacou, C. (2001). Teacher Stress: Directions for future research. *Educational Review*, 53(1), 27-35. <http://dx.doi.org/10.1080/00131910120033628>

Lee, Y. (2015). Comparison of Job Satisfaction Between Nonprofit and Public Employees. *Nonprofit And Voluntary Sector Quarterly*, 45(2), 295-313. <http://dx.doi.org/10.1177/0899764015584061>

Lee, Y. & Sabharwal, M. (2014). Education–Job Match, Salary, and Job Satisfaction Across the Public,, Non-Profit, and For-Profit Sectors: Survey of recent college graduates. *Public Management Review*, 18(1), 40-64. <http://dx.doi.org/10.1080/14719037.2014.957342>

Liu, B., Yang, K., & Yu, W. (2014). Work-Related Stressors and Health-Related Outcomes in Public Service: Examining the Role of Public Service Motivation. *The American Review Of Public Administration*, 45(6), 653-673. <http://dx.doi.org/10.1177/0275074014524298>

Martin, E. (2016). Survey Questionnaire Construction, 1-13. Retrieved from <https://www.census.gov/srd/papers/pdf/rsm2006-13.pdf>

O'Brien, R. (2007). A Caution Regarding Rules of Thumb for Variance Inflation Factors. *Quality & Quantity*, 41(5), 673-690. <http://dx.doi.org/10.1007/s11135-006-9018-6>

Muhonen, T., & Torkelson, E. (2004). Work locus of control and its relationship to health and job satisfaction from a gender perspective. *Stress And Health*, 20(1), 21-28. <http://dx.doi.org/10.1002/smi.994>

Niketta, R. *Datentransformation mit SPSS* (1st ed.). Universität Osnabrück. Retrieved from http://www.home.uni-osnabrueck.de/rniketta/method/SPSS_Beispiel_Transformation_V02.pdf

Perry, J. (1996). Measuring Public Service Motivation: An Assessment of Construct Reliability and Validity. *Journal Of Public Administration Research And Theory*, 6(1), 5-22. <http://dx.doi.org/10.1093/oxfordjournals.jpart.a024303>

Porter, L., & Lawler, E. (1968). Managerial Attitudes and Performance. *Industrial And Labor Relations Review*, 23(1), 141. <http://dx.doi.org/10.2307/2521994>

Prof. Dr. Büssing, A. (2011). *Dr. Cohen's Scales*. *Psy.cmu.edu*. Retrieved 7 June 2016, from <http://www.psy.cmu.edu/~scohen/scales.html>

Quick, T. (1990). Linking productivity and health. Healthy Work: Stress, Productivity, and the Reconstruction of Working Life. *Natl. Prod. Rev.*, 9(4), 475-478. <http://dx.doi.org/10.1002/npr.4040090411>

Reeve, J. (2006). Teachers as Facilitators: What Autonomy-Supportive Teachers Do and Why Their Students Benefit. *The Elementary School Journal*, 106(3), 225-236. <http://dx.doi.org/10.1086/501484>

Schendera, C. (2008). *Clusteranalyse mit SPSS*. München: Oldenbourg, R.

Simon, M., Tackenberg, P., Hasselhorn, H., Kümmerling, A., Büscher, A., & Müller, B. (2005). Auswertung der ersten Befragung der NEXT-Studie in Deutschland. *Universität Wuppertal*, 39. Retrieved from <http://www.next.uni-wuppertal.de>

Srivastava, S. (2009). Locus of Control as a Moderator for Relationship between Organisational Role Stress and Managerial Effectiveness. *Vision: The Journal Of Business Perspective*, 13(4), 49-61. <http://dx.doi.org/10.1177/097226290901300405>

Statistisches Bundesamt,. (2014). *Einwohner der Großstädte in Deutschland 2014 | Statistik. Statista*. Retrieved 10 April 2016, from <http://de.statista.com/statistik/daten/studie/1353/umfrage/einwohnerzahlen-der-grossstaedte-deutschlands/>

Tarrant, T., & Sabo, C. (2010). Role Conflict, Role Ambiguity, and Job Satisfaction in Nurse Executives. *Nursing Administration Quarterly*, 34(1), 72-82. <http://dx.doi.org/10.1097/naq.0b013e3181c95eb5>

Tavakol, M. & Dennick, R. (2011). Making sense of Cronbach's alpha. *Int. J. Medical Education*, 2, 53-55. <http://dx.doi.org/10.5116/ijme.4dfb.8dfd>

Unterbrink, T., Hack, A., Pfeifer, R., Buhl-Grießhaber, V., Müller, U., & Wesche, H. et al. (2007). Burnout and effort–reward-imbalance in a sample of 949 German teachers. *Int Arch Occup Environ Health*, 80(5), 433-441. <http://dx.doi.org/10.1007/s00420-007-0169-0>

Völker, J. (2012). *Datenauswertung mit SPSS: Einsteigerkurs*. Presentation, Münster. unpublished.

WHO. (2016). *WHO | Stress at the workplace. Who.int*. Retrieved 11 April 2016, from http://www.who.int/occupational_health/topics/stressatwp/en/

Wigger, E. (2000). *Occupational Stress Index (OSI) | Unhealthy Work. Unhealthywork.org*. Retrieved 12 April 2016, from <http://unhealthywork.org/other-job-stress-models/occupational-stress-index-osi/>

Wright, B., & Pandey, S. (2008). Public Service Motivation and the Assumption of Person-Organization Fit: Testing the Mediating Effect of Value Congruence. *Administration & Society*, 40(5), 502-521. <http://dx.doi.org/10.1177/0095399708320187>

B. Appendix

Appendix 1: Letter to the school directors sent on the 19th of March

Sehr geehrte(-r) Frau/Herr xxx, sehr geehrte Lehrerinnen und sehr geehrte Lehrer,

als Studentin der Westfälischen Wilhelms-Universität in Münster und der University of Twente in den Niederlanden schreibe ich gerade meine **Bachelorarbeit über die Beziehung zwischen Motivation und Stress**.

Immer wieder berichten die Zeitungen und weitere Nachrichtenkanäle, dass die Zahl von überlasteten Lehrerinnen und Lehrern steigt. Gesundheitliche Gründe, aber auch das erhöhte Stresslevel tragen dazu bei, dass sich Lehrerinnen und Lehrer sehr belastet fühlen. Diesem Umstand möchte ich in meiner Bachelorarbeit näher auf den Grund gehen. Hierzu habe ich einen Fragebogen entwickelt, anhand dessen ich die Beziehung zwischen Motivation und Stress analysieren möchte. Aus diesem Grund bitte ich hiermit um Ihre Mithilfe. Mir ist bewusst, dass Sie sehr viele Aufgaben tagtäglich zu bewältigen haben. Das **Ausfüllen des Fragebogens** beträgt circa **5 Minuten**.

Sehr freuen würde ich mich, wenn Sie sich diese Zeit nehmen könnten und bis zum 31.06.2016 den Fragebogen ausfüllen, um mich in meiner Arbeit zu unterstützen.

Wenn Sie mit der Teilnahme einverstanden sind würde ich Sie bitten, den hier eingefügten Link mit Ihren Lehrkräften zu teilen. Um zu dem Fragebogen zu gelangen, klicken Sie bitte den folgenden Link an: <https://surveys-igs.utwente.nl/index.php?r=survey/index&sid=327225&lang=de>. Sollten technische Probleme auftreten, helfe ich gerne weiter. Bitte schreiben Sie mir eine Email an l.hartl-1@student.utwente.nl. Im Anhang sende ich Ihnen den Fragebogen zusätzlich als PDF-Datei zu, sodass Sie die Art des Fragebogens vorab sehen können.

Gerne lasse ich Ihnen nach Abschluss der Bachelorarbeit meine Ergebnisse, und nach Möglichkeit auch aus der Studie heraus entwickelte Verbesserungsvorschläge, zukommen.

Schon jetzt bedanke ich mich recht herzlich für Ihr Interesse und hoffe sehr auf Ihr Einverständnis, mich in meiner Bachelorarbeit zu unterstützen.

Mit freundlichem Gruß,

Lena Hartl

Appendix 2: Questionnaire attached to the email to the school directors

Grundsätzlich sind ausschließlich Einfachantworten möglich, außer die Fragestellung gibt explizit den Hinweis auf eine Mehrfachantwort. Es ist Ihnen immer überlassen, Fragen auszulassen oder die Beantwortung des Fragebogens abubrechen.

1. Welches Geschlecht haben Sie?

What is your gender?

☐ Weiblich ☐ Männlich ☐ Anderes ☐ Keine
Angabe

2. Wie alt sind Sie?

How old are you?

☐ Jünger als 25 ☐ 25-35 Jahre alt ☐ 36-45 Jahre alt ☐ 46-
55 Jahre alt
☐ 56-65 Jahre alt ☐ älter als 65 ☐ Keine Angabe

3. Wie lange arbeiten Sie schon als LehrerIn?

How long have you been working as a teacher?

☐ Kürzer als 1 Jahr ☐ 1-5 Jahre ☐ 6-10 Jahre
☐ länger als 11 Jahre ☐ Keine Angabe

4. Wie sind Sie vertraglich angestellt?

What does your contract say about working part-time or full-time?

☐ Vollzeit ☐ Teilzeit ☐ Keine Angabe

5. Wie viele Wochenstunden sind vertraglich bei Ihnen festgelegt?

What does your contract say about the hours you work per week?

☐ Weniger als 5 Stunden ☐ 6-10 Stunden ☐ 11-20 Stunden
☐ 21-30 Stunden ☐ 31-40 Stunden ☐ Mehr als 41 Stunden
☐ Keine Angabe

6. An wie vielen Schulen arbeiten Sie momentan?

At how many schools do you work crrently?

☐ An einer Schule ☐ An zwei Schulen ☐ An drei Schulen
☐ An mehr als drei Schulen ☐ Keine Angabe

7. Welche Schulform haben die Schulen an denen Sie arbeiten? (Mehrfachantworten sind möglich)

What kind of school type do the schools have you are working at?

☐ Hauptschule ☐ Realschule ☐ Gymnasium ☐ Gesamtschule
☐ Grundschule ☐ Andere Schulform ☐ Keine Angabe

Fragen zum Thema MOTIVATION							
Die folgenden Fragen beschäftigen sich damit, wie Sie sich motivieren im Berufsalltag. Bitte beantworten Sie die folgenden Fragen mithilfe einer Einschätzung in wie weit Sie sich mit der Aussage identifizieren können und kreuzen Sie pro Aussage eine Antwort an.	Stimme überhaupt nicht zu						Stimme voll und ganz zu
	1	2	3	4	5	6	7
F08 Etwas in der Gesellschaft zu verändern bedeutet mir mehr als meine persönlichen Errungenschaften. <i>Making a difference in society means more to me than personal achievements.</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F09 Mit meiner Einstellung zur Lehrtätigkeit möchte ich der Gesellschaft mehr zurückgeben, als ich von ihr bekomme. <i>I feel people should give back to society more than they get from it.</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F10 Um der Gesellschaft zu helfen, gehe ich das Risiko ein, persönliche Verluste einzustecken. <i>I am willing to risk personal loss to help society.</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F11 Ich stelle meine Pflichten vor mein eigenes Wohl. <i>I believe in putting duty before self.</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F12 Es ist schwierig für mich, meine Gefühle zurückzuhalten, wenn ich schmerzleidende Schüler und Kollegen sehe. <i>It is difficult for me to contain my feelings when I see people in distress.</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F13 Für mich ist es einer der wichtigsten Werte, dass es Menschen wohl ergeht. <i>For me, considering the welfare of others is one of the most important values.</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F14 Ich gerate aus der Fassung, wenn Schüler und Kollegen von anderen unfair behandelt werden. <i>I get really upset when I see students and colleagues being treated unfairly.</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

F15	Für mich ist es wichtig, dass ich meine SchülerInnen richtig einschätze. <i>For me it is very important to get the measure of the students.</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F16	Generell assoziiere ich Politik mit etwas Gutem. <i>I generally associate politics with something positive.</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F17	Das Geben und Nehmen der öffentlichen Entscheidungsfindung spricht mich nicht an. <i>The give and take of public policy making doesn't appeal to me.</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F18	Ich halte viel von Politikern. <i>I do care much for politicians.</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F19	Für mich ist es wichtig, dass ich im öffentlichen Dienst für das Gemeinwohl Sorge. <i>It is important for me that public services contribute to the common good.</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F20	Ich würde es bevorzugen, wenn Beschäftigte im öffentlichen Dienst generell herkunftsbedingte Eigenheiten so behandeln, dass es am besten für die Gesellschaft ist, auch wenn es meinen eigenen Ansichten widerspricht. <i>I would prefer seeing public officials do what is best for the whole community even if it harmed my interests.</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F21	Ich sehe im öffentlichen Schuldienst eine gute Möglichkeit für ein wirkungsvolles gesellschaftliches Engagement. <i>It is important for me to contribute to the common good.</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F22	Ich sehe den öffentlichen Dienst als meine Bürgerpflicht an. <i>I consider public service my civic duty.</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Fragen zum Thema STRESS

Die folgenden Fragen beschäftigen sich damit, wie häufig Sie sich während des letzten Monats durch Stress belastet fühlten. Bitte beantworten Sie die folgenden Fragen mithilfe einer Einschätzung in wie weit Sie sich mit der Aussage identifizieren können und kreuzen Sie pro Aussage eine Antwort an.	nie	eher selten	selten	manchmal	häufig	Sehr häufig	sehr oft
	1	2	3	4	5	6	7
<p>F23 Wie oft hatten Sie sich im letzten Monat darüber aufgeregt, dass etwas völlig Unerwartetes eingetreten ist?</p> <p><i>In the last month, how often have you been upset because of something that happened unexpectedly?</i></p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>F24 Wie oft hatten Sie im letzten Monat das Gefühl, wichtige Dinge in Ihrem Leben nicht beeinflussen zu können?</p> <p><i>In the last month, how often have you felt that you were unable to control the important things in your life?</i></p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>F25 Wie oft hatten Sie sich im letzten Monat nervös und gestresst gefühlt?</p> <p><i>In the last month, how often have you felt nervous and stressed?</i></p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>F26 Wie oft hatten Sie sich im letzten Monat sicher im Umgang mit persönlichen Aufgaben und Schwierigkeiten gefühlt?</p> <p><i>In the last month, how often have you felt confident about your ability to handle your personal problems?</i></p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<p>F27 Wie oft hatten Sie im letzten Monat das Gefühl, dass sich die Dinge nach Ihren Vorstellungen entwickeln?</p> <p><i>In the last month, how often have you felt that things were going your way?</i></p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>F28 Wie oft hatten Sie im letzten Monat das Gefühl, mit all den anstehenden Aufgaben und Problemen nicht richtig umgehen zu können?</p> <p><i>In the last month, how often have you found that you could not cope with all the things that you had to do?</i></p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>F29 Wie oft hatten Sie im letzten Monat das Gefühl, mit Ärger in Ihrem Leben klar zu kommen?</p> <p><i>In the last month, how often have you been able to control irritations in your life?</i></p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>F30 Wie oft hatten Sie im letzten Monat das Gefühl, alles im Griff zu haben?</p> <p><i>In the last month, how often have you felt that you were on top of things?</i></p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>F31 Wie oft hatten Sie sich im letzten Monat darüber geärgert, wichtige Dinge nicht beeinflussen zu können?</p> <p><i>In the last month, how often have you been angered because of things that were outside of your control?</i></p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<p>F32 Wie oft hatten Sie im letzten Monat das Gefühl, dass sich die Schwierigkeiten so aufgestaut haben, dass Sie diese nicht mehr bewältigen können?</p> <p><i>In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?</i></p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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F33 Wie sehr mögen Sie Ihren Job?

How much do you like your job?

- ☐ Sehr gerne ☐ Gerne ☐ Mal mehr, mal weniger ☐ Nicht so gerne
☐ Gar nicht gerne ☐ Keine Angabe

F34 In Anbetracht des Arbeitspensums und dem zeitlichen Rahmen:

Consider your work quota and the provided time frame:

- ☐ Es ist mir immer möglich alle Aufgaben komplett zu erfüllen.
☐ Es ist mir meistens möglich alle Aufgaben komplett zu erfüllen.
☐ Manchmal ist es mir unmöglich alle Aufgaben komplett zu erfüllen, trotz des maximalen Einsatzes.
☐ Objektiv gesehen ist es unmöglich alle Aufgaben komplett zu erfüllen, trotz des maximalen Einsatzes.
☐ Keine Angabe

F35 In wie weit haben Sie Einfluss auf das eigene Arbeitspensum und den Stundenplan?

In how far are you able to influence your own work quota and schedule?

- ☐ Sehr großen Einfluss
☐ Ein bisschen Einfluss
☐ Ein wenig Einfluss
☐ Keinen Einfluss
☐ Keine Angabe

F36 Erhalten Sie widersprüchliche Informationen oder Arbeitsanweisungen über die Arbeit, die Sie erledigen sollen?

Do you get inconsistent information or working instructions what to work?

- ☐ Nie

- ☐ Manchmal
- ☐ Gelegentlich
- ☐ Häufig
- ☐ Keine Angabe

F37 Wie ist das Arbeitsklima an Ihrem Arbeitsplatz?

How is the working atmosphere at your working place?

- ☐ Exzellent, wir kommen alle gut miteinander zurecht und Missverständnisse kommen nur in sehr geringem Maße vor.
- ☐ Gut, die meiste Zeit über kommen wir sehr gut miteinander aus und Missverständnisse kommen nur in geringem Maße vor.
- ☐ Befriedigend, es treten ein paar Stimmungsschwankungen auf und manchmal kommen Missverständnisse vor.
- ☐ Ungenügend, es herrschen große Spannungen und Konflikte.
- ☐ Keine Angabe

F38 Wie oft müssen Sie mehrere Aufträge zeitgleich bearbeiten?

How often do you have to fulfill many tasks simultaneously?

- ☐ Nie
- ☐ Manchmal
- ☐ Gelegentlich
- ☐ Häufig
- ☐ Keine Angabe

Nach Abschluss der Umfrage möchte ich mich noch ein Mal recht herzlich für Ihre Zeit und Teilnahme bedanken. Für Anmerkungen und Kommentare kontaktieren Sie mich gerne unter l.hartl@student.utwente.nl oder nutzen den hier verbliebenen Platz für Ihre Stellungnahme.

Appendix 3: Frequency and percentages for the demographic variable working time

Time working as a teacher

Frequency

Percentage (%)

Less than 1 year	1	2,8
1-5 years	7	19,4
6-10 years	5	13,9
Longer than 11 years	23	63,9

Appendix 4: Frequency and percentages for the demographic variable number of schools

	Frequency	Percentage (%)
At 1 school	33	91,7
At 2 schools	2	5,6
At 3 schools	1	2,8

Appendix 5: Reliability Analysis of Self-Sacrifice

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,701	,707	4

Appendix 6: Reliability Analysis of Compassion

Reliability Statistics

Cronbach's Alpha ^a	Cronbach's Alpha Based on Standardized Items ^a	N of Items
-,562	-,695	2

Appendix 7: Reliability Analysis Commitment to Public Interest

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,534	,553	3

Appendix 8: Reliability Analysis of PSM (10 items)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,599	,629	10

Appendix 9: Reliability Analysis of PSM (9 items)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,721	,727	9

Appendix 10: Reliability Analysis of PSM (item-total statistics)

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
F08 Making a difference in society is more important than personal achievements	37,00	40,629	,588	,549	,508
F09 Giving back to society is more important than getting something back	37,33	37,657	,577	,542	,490
F10 Willing to risk personal loss to help society	37,69	40,333	,383	,631	,543
F11 Putting duty before self	37,22	41,663	,233	,576	,591
F12 Difficult to contain feelings if people are in distress	37,56	58,997	-,381	,374	,721
F15 It is important to get the measure of the students	34,89	45,873	,419	,435	,558
F18 Care much about politicians	38,72	49,521	,045	,296	,619
F20 Prefer seeing public officials do what is best for the whole community even if it harms the own interests	37,47	46,656	,232	,303	,583
F21 Important to contribute to the common good	35,89	42,216	,463	,346	,534
F22 Consider public service as civic duty	37,47	36,599	,508	,556	,501

Appendix 11: Mean change of stress variable

Statistics

Stress

N	Valid	36
	Missing	0
Mean		3,69

Statistics

Stress without F29 = 9 items

N	Valid	36
	Missing	0
Mean		3,73

Appendix 12: Reliability Analysis of stress variable

Item-Total Statistics

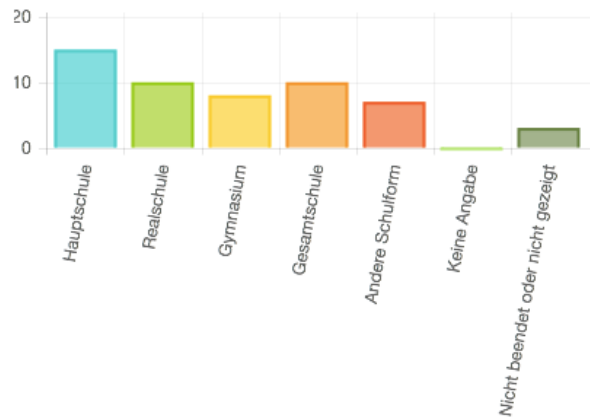
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
F23 Upset because something unexpected happened	33,00	94,343	,666	,648	,893
F24 Feel unable to control important things in life	32,69	88,847	,713	,705	,890
F25 Feel nervous and stressed	32,39	87,616	,788	,780	,884
F26 Feel confident about own abilities to handle personal problems	33,81	99,875	,491	,460	,903
F27 Feel that things go their way	33,39	99,044	,607	,524	,897
F28 Not able to cope with all things that need to be done	33,53	88,542	,798	,688	,884
F29 Able to control irritations in life	33,58	107,107	,163	,433	,921
F30 Feel to be able to be on top of things	33,81	90,675	,804	,778	,884
F31 Feel angered because of things that are outside of own control	32,64	91,437	,737	,684	,888
F32 Feel difficulties to pile up so high that one cannot overcome them	33,67	83,029	,827	,718	,881

Appendix 13: Descriptive Statistics F03

Working as a Teacher

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Less than 1 Year	1	2,8	2,8	2,8
1-5 Years	7	19,4	19,4	22,2
6-10 Years	5	13,9	13,9	36,1
Longer than 11 Years	23	63,9	63,9	100,0
Total	36	100,0	100,0	

Appendix 14: Descriptive Statistics F07



Appendix 15: Levels of PSM

Statistics

PSM categorized, 9 items

N	Valid	36
	Missing	0
Mean		2,44
Minimum		1
Maximum		3

PSM categorized, 9 items

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Low Level of PSM	1	2,8	2,8	2,8
	Middle Level of PSM	18	50,0	50,0	52,8
	High Level of PSM	17	47,2	47,2	100,0
	Total	36	100,0	100,0	

Appendix 16: Correlation between Gender and Stress

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	4,985 ^a	2	,083
Likelihood Ratio	5,252	2	,072
Linear-by-Linear Association	3,965	1	,046
N of Valid Cases	36		

a. 2 cells (33,3%) have expected count less than 5. The minimum expected count is 2,50.

Appendix 17: Cross-Tabs of F02 and the level of Stress

Age * Categorized item into low, medium, high Level of Stress Crosstabulation

			Categorized item into low, medium, high Level of Stress			Total
			Low Level of Stress	Middle Level of Stress	High Level of Stress	
Age	25-35 Years old	Count	3	4	4	11
		% within Age	27,3%	36,4%	36,4%	100,0%
	36-45 Years old	Count	1	2	2	5
		% within Age	20,0%	40,0%	40,0%	100,0%
	46-55 Years old	Count	7	3	2	12
		% within Age	58,3%	25,0%	16,7%	100,0%
	56-65 Years old	Count	7	0	1	8
		% within Age	87,5%	0,0%	12,5%	100,0%
Total	Count	18	9	9	36	
	% within Age	50,0%	25,0%	25,0%	100,0%	

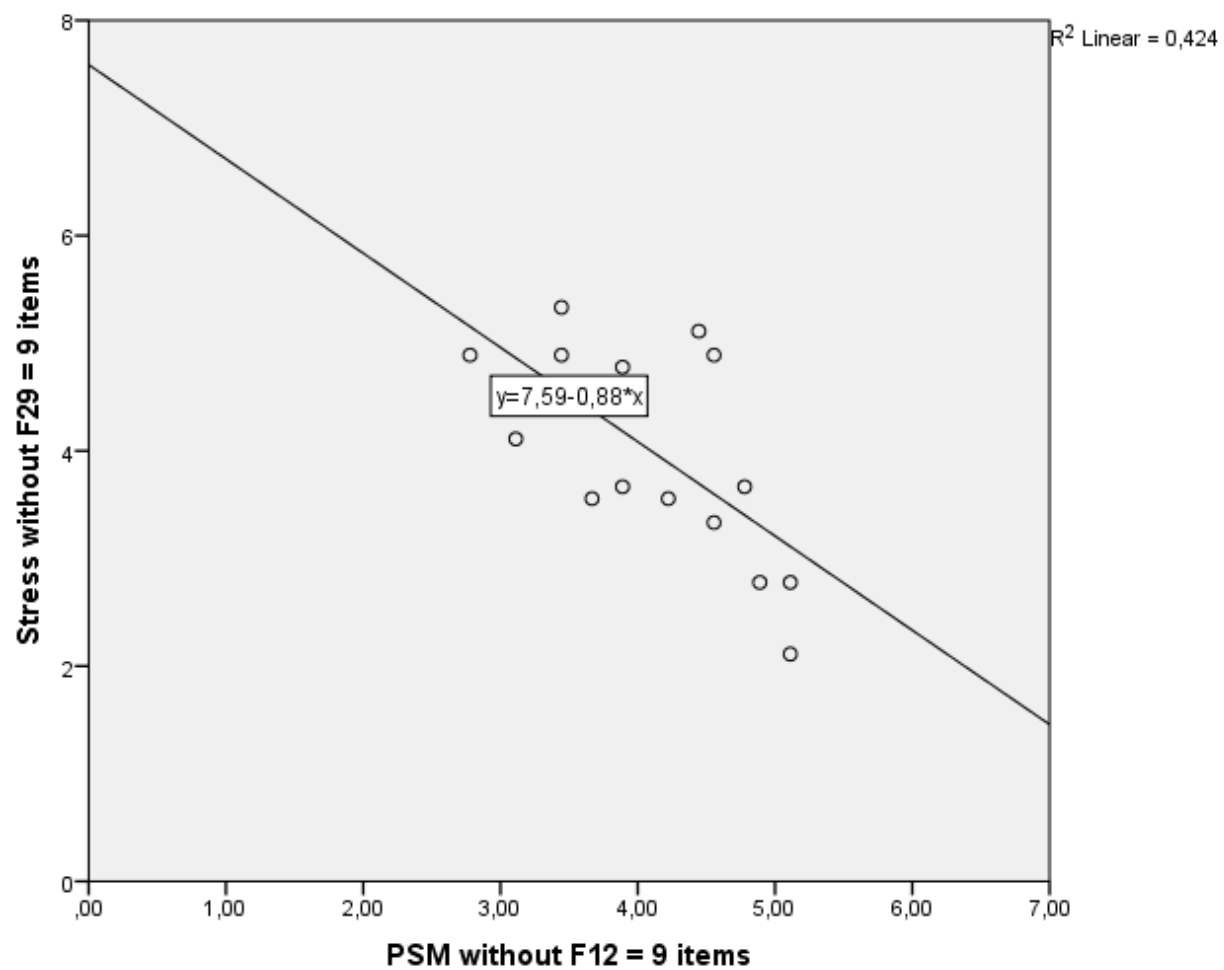
Appendix 18: Factor Analysis of PSM**KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,666
Bartlett's Test of Sphericity	Approx. Chi-Square	111,190
	df	45
	Sig.	,000

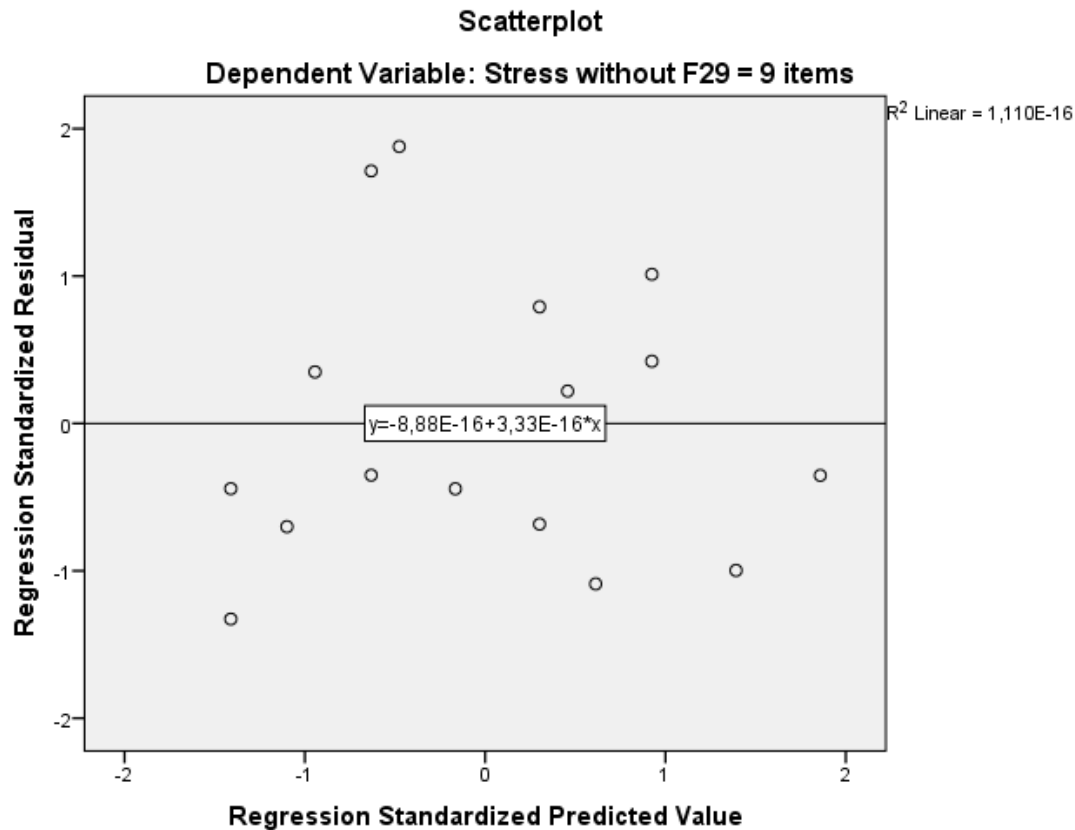
Appendix 19: Factor Analysis of Stress**KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,863
Bartlett's Test of Sphericity	Approx. Chi-Square	204,029
	df	36
	Sig.	,000

Appendix 20: Linear Regression Analysis of PSM and stress



Appendix 21: Linearity and Homoscedasticity



Appendix 22: Multiple Regression Analysis, check on Multicollinearity (VIF)

Coefficients ^a			
Model		Collinearity Statistics	
		Tolerance	VIF
1	F34 Work quota vs. provided time frame	,718	1,393
	F35 Influence on own work quota and schedule	,536	1,867
	F36 Get inconsistent information or working instructions	,793	1,262
	F37 Working atmosphere	,678	1,474
	F38 Fulfill tasks simultaneously	,786	1,272
	PSM without F12 (9 items)	,669	1,495
	Gender	,647	1,546
	Age	,615	1,626

a. Dependent Variable: F33 Do you like your job

Coefficients ^a			
Model		Collinearity Statistics	
		Tolerance	VIF
1	F35 Influence on own work quota and schedule	,504	1,986
	F36 Get inconsistent information or working instructions	,677	1,477
	F37 Working atmosphere	,776	1,289
	F38 Fulfill tasks simultaneously	,772	1,295
	PSM without F12 (9 items)	,675	1,482
	Gender	,657	1,521
	Age	,655	1,527
	F33 Do you like your job	,657	1,521

a. Dependent Variable: F34 Work quota vs. provided time frame

Coefficients^a

Model		Collinearity Statistics	
		Tolerance	VIF
1	F36 Get inconsistent information or working instructions	,688	1,454
	F37 Working atmosphere	,713	1,402
	F38 Fulfill tasks simultaneously	,821	1,218
	PSM without F12 (9 items)	,848	1,180
	Gender	,649	1,540
	Age	,635	1,575
	F33 Do you like your job	,668	1,496
	F34 Work quota vs. provided time frame	,686	1,457

a. Dependent Variable: F35 Influence on own work quota and schedule

Coefficients^a

Model		Collinearity Statistics	
		Tolerance	VIF
1	F37 Working atmosphere	,706	1,416
	F38 Fulfill tasks simultaneously	,746	1,340
	PSM without F12 (9 items)	,665	1,504
	Gender	,646	1,548
	Age	,633	1,579
	F33 Do you like your job	,739	1,353
	F34 Work quota vs. provided time frame	,689	1,451
	F35 Influence on own work quota and schedule	,514	1,947

a. Dependent Variable: F36 Get inconsistent information or working instructions

Coefficients^a

Model		Collinearity Statistics	
		Tolerance	VIF
1	F38 Fulfill tasks simultaneously	,737	1,357
	PSM without F12 (9 items)	,651	1,536
	Gender	,689	1,451
	Age	,633	1,579
	F33 Do you like your job	,633	1,579
	F34 Work quota vs. provided time frame	,791	1,264
	F35 Influence on own work quota and schedule	,533	1,875
	F36 Get inconsistent information or working instructions	,707	1,414

a. Dependent Variable: F37 Working atmosphere

Coefficients^a

Model		Collinearity Statistics	
		Tolerance	VIF
1	PSM without F12 (9 items)	,664	1,505
	Gender	,671	1,490
	Age	,637	1,570
	F33 Do you like your job	,673	1,486
	F34 Work quota vs. provided time frame	,722	1,385
	F35 Influence on own work quota and schedule	,563	1,775
	F36 Get inconsistent information or working instructions	,686	1,458
	F37 Working atmosphere	,676	1,479

a. Dependent Variable: F38 Fulfill tasks simultaneously

Appendix 23: Correlation Analysis

Descriptive Statistics

	Mean	Std. Deviation	N
Stress without F29 = 9 items	3,73	1,150	36
PSM without F12 = 9 items	4,1042	,71373	16

Correlations

		Stress without F29 = 9 items	PSM without F12 = 9 items
Stress without F29 = 9 items	Pearson Correlation	1	-,651**
	Sig. (2-tailed)		,006
	N	36	16
PSM without F12 = 9 items	Pearson Correlation	-,651**	1
	Sig. (2-tailed)	,006	
	N	16	16

** . Correlation is significant at the 0.01 level (2-tailed).