

MASTER'S THESIS

Teachers' Psychological Need Satisfaction Related to their Need-supportive Teaching

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Teachers' Psychological Need Satisfaction Related to their Need-supportive Teaching

De relatie tussen bevrediging van psychologische basisbehoeften van docenten en hun behoefte-ondersteunend doceren.

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Summary

In Dutch higher education, motivation problems of students are an important cause of dropout and underachievement. According to self-determination theory, need-supportive teaching is a powerful instrument to encourage the motivation of students, in order to increase their performance. Need-supportive teaching is providing and demonstrating autonomy support, structure and involvement. The relation between teachers' own need satisfaction and optimal functioning as a need-supportive teacher is assumed, but not well researched. Aim of this study was to gain more insight in observed need-supportive teacher behaviour and self-reported psychological need satisfaction of the teachers. The design of this study was a combination of qualitative and quantitative research.

Teachers of applied psychology from the Amsterdam University of applied sciences, working in an innovative didactical framework, participated in the study. All 19 teachers who were active in the observational period, were observed during 30 minutes of teaching, using the rating sheet for need-supportive teaching (Stroet, Opdenakker and Minnaert, 2013). Afterwards they were asked to fill in the questionnaire on Basic psychological needs frustration and satisfaction (Chen et al., 2015).

An important finding was that not all 22 components of the rating sheet were observed in the classroom. For example, only three of the four components of dimension affection were observed. This provides insight in the usefulness of the rating sheet and suggestions for further research to validate the rating sheet.

It also became clear that the teachers of applied psychology who were observed, almost all often thwarted the need for autonomy, although they also taught autonomy supportive. They all provided a lot of structure and not much chaos. Most of the time, teachers showed a lot of involvement and not much disaffection.

We found significant relations between teachers' feelings of frustration of their own autonomy and their teaching behaviour: teachers who felt frustrated in their own need for autonomy, taught less supportive for autonomy and involvement. Teachers who felt satisfaction of their need for competence were more autonomy supportive. The total satisfaction of basic psychological needs of the teachers and total need-supportive teaching was also positively related.

These results confirm that the quality of teachers own motivation might not only affect their own well-being but can also reflect how they interact with their students. This can give directions to interventions to support basic psychological needs of teachers: Such interventions can positively influence their need-supportive behaviour that, in consequence, can positively influence motivation of students.

Keywords: need-supportive teaching, self-determination theory, basic psychological needs

1. Introduction

1.1 Problem statement and goal of research

In Dutch higher education, a lot of students fall behind and have study delay, also the dropout rate is high. Both aspects result in lower study success (OCW, 2015). Students in Dutch higher education are not very motivated: They spend little time on their studies and become at the same time too little challenged. They also experience not enough attention for talent and talent development (OCW, 2015). This is a worrisome development: Motivation to study is seen as one of the most important predictors of a successful educational career (Richardson, Abraham and Bond, 2012). When students feel motivated to study, they are better in learning new knowledge and developing deep knowledge (Stroet, Opendakker and Minnaert, 2013).

Therefore, interventions to increase study success that focus on the motivation of students in higher education, might be fruitful to start an upward trend. According to self-determination theory (SDT), the learning environment plays an important role in motivation to learn. This learning environment should support three basic psychological needs (BPN): autonomy, competence, and relatedness (Ryan and Deci, 2000). Autonomy refers to the need to experience behaviour as volitional and self-endorsed rather than pressured; it implies the experience of regulation by the self (Ryan and Deci, 2000). Competence refers to the need to experience efficacy, mastery, and skilfulness. Relatedness refers to the need to feel significant, connected to, and cared for by important others. According to BPN theory, contexts that support or thwart these three needs have impact on wellness. The theory argues that all three needs are essential and that if any is thwarted, there will be functional costs. (Orkibi and Ronen, 2017)

Teachers are key actors in shaping the learning environment and they can stimulate motivation by supporting these three basic psychological needs (Reeve, Deci and Ryan, 2004). Stroet et al. (2013) made clear that need-supportive teaching is a powerful instrument to encourage the motivation of students in order to increase their performance. Need-supportive teaching is providing and demonstrating autonomy support, structure and involvement. These are the three dimensions of need-supportive teaching (Stroet et al., 2013). Leenknecht, Wijnia, Loyens and Rikers (2017) conclude that need-supportive teaching is of importance in higher education as well. They recommend more research to get a clearer picture of the effects of need-supportive teaching in higher education. Important is including *all these* three dimensions of need-supportive teaching.

As mentioned above, the learning environment is a very important aspect of studies on student motivation. There are a lot of educational institutions in the Netherlands with a didactical framework who provide learning environments that relate strongly to the basic psychological needs. An example is the department of Applied Psychology (AP) of the Amsterdam University of Applied Sciences (AUAS): The cohort of students started in September 2018, studying in a social constructivist

didactical framework: Students learn with and from each other while working on a solution for a practical problem. Students organize their work independently and are responsible for the result. The teacher guides and coaches, stimulates students in their development and in delivering quality. The expected teacher behaviour at AP at AUAS is innovative in Dutch higher education (Toegepaste Psychologie, 2017).

From previous research, it is known that basic psychological need satisfaction effects both intrinsic motivation and innovative behaviour of teachers (Klaeijns, Vermeulen and Martens, 2017) and teachers own need satisfaction influences their motivating behaviour in classroom (Aelterman, 2014). We assume the teachers own need satisfaction to be an important factor in need-supportive teaching. The current, explorative study aims to investigate the relation between the teachers own psychological need satisfaction and need-supportive teaching.

1.2 Theoretical background

1.2.1. Need-supportive teaching

Teachers have a central position in the social context of the classroom, since they guide students in the learning process. Numerous studies on education led to the formulation of empirically supported recommendations for teachers on how to nurture learners' psychological needs (Jang, Reeve and Deci, 2010).

Self-determination theory (SDT) is a macro theory of motivation with six mini-theories that explain different aspects of human motivation. SDT is based on the premise that people are intrinsically motivated to learn by nature (Ryan & Deci, 2000). Basic psychological needs theory is one of the sub theories of the SDT (Deci and Ryan, 2002; Vansteenkiste, Niemiec & Soenens, 2010) that provides a framework to understand the role of teacher behaviour in motivating students: Students can become more intrinsically motivated when their basic psychological needs are supported (Ryan and Deci, 2000). The basic psychological needs for autonomy, competence and relatedness play a pivotal role in well-being and motivation for study and work (e.g. Deci and Ryan, 2000). Autonomy combined with feelings of competence and relatedness are most favourable to achieve self-regulating and intrinsic motivated students and teachers who support these basic psychological needs are assumed to have an important positive effect on student motivation and engagement (Stroet et al, 2013). In order to support students' need satisfaction, teachers adopt different styles, linked to the three needs (Leenknecht et al, 2017).

The first dimension of need-supportive teaching is **autonomy support**. The need for autonomy refers to the need for experiencing volition and to act in accordance with the students' sense of self (Deci and Ryan, 2000). Teaching is autonomy-supportive when it provides students with choices, so they can choose tasks they perceive somewhat interesting or important (Stroet et al, 2013; Leenknecht et al, 2017). To behave autonomy-supportive, the teacher looks at the perspective of the

student, shows respect, acknowledges and accepts students' expressions and does not use controlling language (Vansteenkiste, Sierens, Goossens, Soenens, Dochy, Mouratidis, and Beyers, 2012).

The second dimension of need-supportive teaching is **structure**, which relates to the need for competence. This need refers to students' experience of effectiveness and confidence to achieve desired outcomes (Sierens, Vansteenkiste, Goossens, Soenens, and Dochy, 2009). Teachers who provide structure, communicate clearly their expectations and guidelines as well as give students informational feedback, support and encouragement. In the definition Stroet (2013), this means "The teacher is clear and consequent and gives step by step instructions related to the level of the student".

Finally, the third motivating, need-supportive teaching dimension is **involvement** that is related to the students' feelings of relatedness. Relatedness refers to the needs to feel connected to others, the development of positive and mutually satisfying relationship, closeness and trust (Ryan and Deci, 2000). Teachers can promote involvement by showing affection, by expressing understanding, by dedicating resources, like time, and then ensure that they are dependable to offer support (Stroet et al, 2013).

1.2.2. The relation between the three need-supportive teaching dimensions

Research on need-supportive teaching focused much on autonomy support in the past; during the last decade more attention has been paid to the relation between autonomy support and structure (Hospel and Galand, 2016). The discussion on need-supportive teaching is nowadays focused on the cohesion between the three dimensions (autonomy support, structure, and involvement). Theoretically they are distinct, but not in every study all three are replicated (Leenknecht et al, 2017). In most research, only autonomy support and structure are studied (Jang et. Al. , 2010).

Involvement should be taken more into account, since it has shown to be important for students' self-esteem, motivation and engagement (Jang et al, 2010). In our study, all three dimensions are considered.

1.2.3 Teachers' own need satisfaction

It is well known that some teachers teach more need-supportive than other teachers and many studies show that there is a relation between teaching behaviour and student motivation and outcomes (e.g., Van den Berghe, Soenens, Vansteenkiste, Aelterman, Cardon, Tallir, and Haerens, 2013). Therefore, it is relevant to know what determinants of teachers' need-supportive teaching are. It is known that beliefs, values and personality dispositions of the teachers are related to their teaching behaviour (Reeve, 2009).

Another mini- theory of the self-determination theory that is researched in teachers, is General Causality Orientations theory (GCOT). According to GCOT, 2 orientations labelled Autonomy and Controlled, are understood as relatively enduring aspects of personality, and both orientations exist within each individual to some degree.

Autonomy orientation is the extent to which a person is oriented toward aspects of the environment that stimulate intrinsic motivation, are optimally challenging, and provide informational feedback. Controlled Orientation is the extent to which a person is oriented toward being controlled by rewards, deadlines, structures, ego-involvements, and the directives of others (Deci and Ryan, 1985).

Orientation has been related to the teaching behaviour (Vansteenkiste, Smeets, Soenens, Lens, Matos, & Deci, 2010), in which a controlled orientation relates to less observed need-supporting teaching (Van den Berghe et al, 2013).

As described above, satisfaction of the three basic psychological needs is associated with well-being, motivation and optimal functioning (Vansteenkiste and Ryan 2013). It is widely known that this also counts for teachers (Deci, Ryan, Gagné, Leone, Usunov, and Kornazheva, 2001; Guay, Boggiano, and Valerand, 2001; Gagné, Ryan, and Bargmann, 2003; Baard, Deci, and Ryan, 2004; Abós, Haerens, Sevil Serrano, Aelterman, and García-González, 2018). This broad research on the relation between teachers' need satisfaction and optimal functioning, makes it very interesting why one important aspect of optimal teacher functioning, the need-supportive teaching, has not been studied yet.

1.3 Research question

The purpose of this study was to gain more insight in the observable need-supportive teacher behaviour and psychological needs satisfaction of the teachers within an innovative learning environment that supports the three psychological needs for both students and teachers. The key research question is:

What observed need-supportive teaching in an innovative learning environment in higher education is related to teachers' satisfaction of the basic psychological needs?

First aim of this study was to answer the sub-question: What need-supportive and need-thwarting teaching can be observed in an innovative learning environment in higher education? The second aim of this study is to gain first ideas about possible relations between these observed teaching behaviors and the basic psychological needs satisfaction of the teachers.

2. Method

2.1 Design

Numerous studies on the relation between need-supportive teaching and student motivation are known, often only through student self-reports (Stroet et al., 2013). Although observation and student perception of teaching behaviour share similar theoretical considerations, representations seem to differ to some extent (Maulana & Helms-Lorenz, 2016). In our study we wanted to gain more insight in the relation between the teachers' experienced need satisfaction and the *observable* teacher

behaviour. Therefore, for the design of this study we chose a combination of (1) qualitative measurements, in the form of observations of need-supportive teaching, and (2) quantitative measurements, in the form of questionnaires for teachers' need satisfaction. We observed and described the specific need-supportive and need-thwarting behaviour in teaching practice. This allows us to gain insight in the frequency in which need-supportive behaviours occur in teaching practice, since theoretical principles of need-supportive behaviours that have been studied intensively in laboratory or questionnaires, may rarely occur in daily life and teaching practice (Haerens, Aelterman, Van den Berghe, De Meyer, Soenens en Vansteenkiste, 2013). It is an explorative study since studies on the relation between need-supportive teaching and teachers' need satisfaction at work are not known by the researcher; it seems to be a research area not well analysed.

2.2 Participants

All teachers who work in the first year of Applied Psychology were asked to participate in this study. The sample of the present study consists of 19 teachers who work in the first year of applied psychology. They represent 76% of the teachers who work in the first year of applied psychology. The other 24% could not participate because they did not have classes in the observational period.

All participating classes include between five and 20 students.

2.3 Measures

2.3.1. Teacher background characteristics

Teacher background characteristics including age, gender and years of teaching experience, were asked by means of a questionnaire. Ten participants were man and nine were women. Mean age was 31,7 years (SD 9,4). Mean years of experience as teacher at applied psychology were 3,9 (SD 2,6).

2.3.2 Observations of need-supportive teaching

We videotaped all 19 lessons, using an action camera. These videotaped lessons were coded using the existing rating with the three aspects of need-supportive teaching: the observation scale 'rating sheet for need-supportive teaching' by Stroet (2014). Stroet based the rating sheet on examination of existing rating sheets as well as an extensive review of available literature on self-determination theory and practices of need-supportive teaching (Stroet, 2014). The rating sheet consists of six dimensions of behaviour: autonomy supportive, autonomy thwarting, structure, chaos, relatedness support and disaffection. All these dimensions have three or four components. For example, for the category 'Teachers involvement', one of the components is 'Dedication of resources' which is operationalised in '*being available to all students in class*'. The rating sheet consists of 22 components in total.

The rating sheet for the observation was used in English, since a Dutch version is not available, and the researcher was competent to use the rating sheet in English.

The rating sheet consists of 11 need-supportive components and 11 need-thwarting components (see appendix 1). The 22 components were coded every five minutes using a four-point frequency scale rating from 0 (never observed) to 1 (sometimes observed) to 2 (often observed) to 3 (observed all the time). This interval-sampling approach is based on the study of Aelterman (2014). Like Aelterman, the researcher also gave in this study a global impression of provided autonomy support, structure and relatedness on the four-point scale at the end of the class. Cents-Boonstra (2018) made an instruction sheet ‘coding back to basics’ for interval sampling of observed motivational behaviour of teachers. This instruction sheet was used by coding the five-minute intervals.

Each teacher action was classified either as being relevant or irrelevant in terms of the 22 components of need-supportive teaching. Teacher-student interactions were interpreted in the context and from what we considered the perspective of the students, consistent with how Stroet (2014) developed the used rating sheet. In addition to this micro-coding, the observer also scored her impression of teachers global rating on the six dimensions in the rating sheet afterwards: autonomy support, autonomy thwarting structure, chaos, relatedness support and disaffection. In the end, all interval-scores per dimension were counted together, which was then divided by the number of coded five minutes intervals in the lesson. Dimensional scores were created by averaging the dimensions reflecting each of the three need-supportive teaching dimensions (Van den Berghe et al, 2013; Stroet et al, 2015). In this study average scores on each dimensional were compared to the global impression of the rater. Adding to prior research on need-supportive teaching, in this study, prevalence of the 22 specific components was noted. This was done to gain more insight in which specific need-supportive and need-thwarting behaviours were more prevalent than others. This allows us to gain insight in the frequency in which the 22 different components really occur; principles of need-supportive behaviours that have been studied in laboratory settings or questionnaires, may rarely occur in daily life (Haerens et al, 2013)

All coding of the videotapes was conducted by the researcher. For the purpose of enhancing validity and establishing reliability, the researcher asked other researchers who are familiar with SDT to code the first two videos together. The results were studied and discussed among the three researchers. This approach gave the researcher of this study more focus in the rating of the other 17 videos.

2.3.3. Questionnaire of Basic Psychological Needs

Teachers’ satisfaction of the basic psychological needs will be measured with the Dutch version of the *Basic Psychological Needs Satisfaction and Frustration Scale* (BPNSFS) (Chen et al., 2015). Ryan and Deci (2000) and Vansteenkiste and Ryan (2013) concluded that within *Basic Psychological Need Theory*, besides the well-known satisfaction, also frustration of the psychological needs for autonomy, competence, and relatedness can be considered critical for the prediction of individuals’ motivation and well-being. A new scale, the Basic Psychological Need Satisfaction and

Frustration Scale (Chen et al., 2015), was developed which included both satisfaction and frustration items.

BPNSFS is slightly adapted for this study by adding the context of work to the questionnaire. We made the choice for using the 'standard' BPNSFS and explicitly starting the questionnaire by making clear to answer the questions in the context of work, since the basic psychological needs satisfaction scale at work is only available in English. Translation of this English questionnaire probably would give some problems with reliability and validity and the Dutch version of the BPNSFS is widely validated (Chen et al., 2015).

2.4 Procedure

The researcher of this study is connected to Applied Psychology (AP) at the Amsterdam University of applied sciences. After approaching the manager of AP, an email was sent to all teachers who participate in the first year of AP to ask if they want to participate in the study. They were informed about the study and the planned measurements. This resulted in a sample of 20 teachers that gave approval to participate in the study by means of informed consent. One of the teachers was ill during the observational period which resulted in 19 participating teachers.

At AP, students are working in learning communities, teachers are more coaches than classical teachers. Teachers were asked to provide an overview of their scheduled meetings which students, where they would have an active role in helping their students working on assignments. All 19 higher education teachers were observed during the first 30 minutes of each meeting which students, since often the meetings took only 30 minutes.

A few days before the observation, teachers and students received an information letter and an informed consent form to be signed. None of the teachers nor students responded negatively and did not participate.

Classrooms were equipped with one action camera which was directed to the teacher, or when the teacher was talking to an individual or a small group of students, at the teacher-student interaction. The researcher tried to make the interference as minimal as possible. Teachers were equipped with a small microphone. Directly after the 30 minutes of observation, teachers were asked to fill in the Dutch version of the *Basic Psychological Needs Satisfaction and Frustration Scale* (BPNSFS) (Chen, Vansteenkiste, Beyers, Boone, Deci, Van der Kaap-Deeder, Duriez, Lens, Matos, Mouratidis, Ryan, Sheldon, Soenens, Van Petegem, and Verstuyf, 2015).

2.5 Procedure

For the qualitative part of this study, the 20 components of the teachers were described to gain more insight in what kind of behaviours we see in daily practice.

To get insight in the relations between need-supportive teaching behaviour and teachers' need satisfaction, Pearson's bivariate correlations were conducted to examine all relationships between the

variables. Due to the small sample of participants, N=19, significant relations were expected to be hard to find. The teacher’s gender, years of experience and age are used as control variables. Independent variables were (a) Separate scores on the six dimensions of the BPNSFS, (b) Dimensional scores on the three scales, and (c) The sum score of total experienced need frustration and support. Dependent variables were (a) The six separate need-supportive teaching dimensions, (b) Dimensional scores on the three need-supportive teaching dimensions, and (c) Overall need-supportive teaching.

3. Results

The first aim of this study was to describe the six observed dimensions of need-supportive and need-thwarting teaching. Using the rating sheet (Stroet, 2013) it became clear that not all of the six dimensions were observed in every teacher. Table 1 shows how often on average each dimension per teacher is observed in the six 5-minute intervals of the whole 30-minute observation. 0 meaning never, 1 meaning sometimes, 2 meaning often, 3 meaning all the time. We hardly see the dimension disaffection and also chaos is not often observed. Both autonomy thwarting and autonomy supportive behavior is regularly observed. Structure and involvement are also often observed. So, the only need-thwarting teaching we see in almost every teacher, is autonomy thwarting teaching.

Table 1
Need supporting and thwarting behaviour per teacher

Teacher	Autonomy supportive	Autonomy thwarting	Structure	Chaos	Involvement	Disaffection
1	2	1	2	0	3	0
2	0	1	2	0	1	0
3	1	2	2	1	3	0
4	2	1	3	0	3	0
5	0	3	1	0	0	1
6	1	2	1	1	1	0
7	1	2	1	1	1	0
8	2	2	2	0	2	1
9	1	2	3	0	1	0
10	1	1	3	0	2	0
11	1	1	3	0	1	0
12	2	2	2	0	2	0
13	2	1	2	1	2	0
14	3	1	3	0	3	0
15	2	0	1	0	3	0
16	0	2	1	0	1	1
17	1	1	2	0	1	0
18	1	1	2	0	1	0
19	2	2	2	1	1	0

Table 2 shows prevalence of the components per teacher and average prevalence of every component in of the 30-minute observation.

Autonomy thwarting behavior component ‘Control: *‘Keeping possession of the learning material, providing solutions before students have time to reflect by themselves, exerting pressure, or disrupting student’s natural rhythm by not allowing them to realise their action plans’*, was observed often on average: mean 1,8 with a SD of 0,8. This is the only need- thwarting behaviour we saw often. All three

components of autonomy supportive behaviour, ‘Choice’, ‘Fostering relevance’ and ‘Respect’ were observed. Teachers’ provision of structure consisted most of the time of ‘Clarity’ and/or ‘Guidance’. ‘Encouragement’ and ‘Informational feedback’ were less often observed but were also prevalent.

When the teacher’s behaviour was providing chaos, it were almost always the components ‘Unclarity’ or ‘No guidance’ that were observed. All four components of involvement were observed often in most teachers’ behaviour. In disaffection, it was almost always ‘No attunement’ that was observed as need-thwarting. Components of disaffection ‘Disaffection’ was never and ‘No dependability’ was only in one teacher observed.

Table 2
Prevalence of components of NST per teacher and means of components

Teacher nr.																					
Component	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Choice	0,74	0,71	0	0	0	1	0	0	0	1	1	0	1	1	1	2	2	0	1	1	2
Fostering relevance	1,11	0,72	0	2	2	2	1	2	1	2	1	1	0	1	2	1	1	1	0	1	0
Respect	0,68	0,86	2	1	0	2	0	0	0	2	0	0	0	1	2	2	0	0	0	0	1
Control	1,68	0,8	2	2	2	0	3	3	2	1	2	1	2	2	1	0	1	2	2	2	2
Forcing meaningless activities	0,21	0,41	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	0
Disrespect	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Clarity	1,79	0,41	2	2	2	2	1	2	2	2	2	2	2	2	1	2	2	1	1	2	2
Guidance	1,58	0,67	2	2	2	3	1	2	2	2	1	1	1	2	0	2	2	1	1	2	1
Encouragement	0,26	0,55	0	0	1	0	0	0	0	1	0	0	0	0	0	2	0	0	0	1	0
Informational feedback	0,74	0,64	1	1	1	1	0	0	0	1	0	2	1	1	1	2	1	1	0	0	0
No clarity	0,26	0,55	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1
No guidance	0,21	0,52	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0
Discouragement	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Evaluative feedback	0,05	0,22	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Affection	1,53	0,6	3	1	2	2	1	1	1	2	1	2	2	2	1	2	2	1	1	1	1
Attunement	1,32	0,73	3	1	2	2	0	1	1	1	1	0	2	2	1	2	2	1	1	1	1
Dedication of resources	0,68	0,73	1	0	2	2	0	1	1	0	1	0	1	0	0	2	0	0	1	1	0
Dependability	0,95	0,6	1	0	1	2	1	1	0	2	1	0	1	1	1	2	0	1	1	1	1
Disaffection	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No attunement	0,37	0,67	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	1	1	0	2
No dedication of resources	0,21	0,52	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0
No dependability	0,05	0,22	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0

The second aim of this study was to gain first ideas about possible relations between these observed teaching behaviors and the basic psychological needs satisfaction of the teachers. Possible associations between teachers' need-supportive behaviour and teachers own psychological need satisfaction were tested and are represented in table 3. We measured all correlations between all aspects of need-supportive teaching and scores on the BPNSFS. We will describe here most relevant findings and focus in descriptions on relations between need supportive teaching and scores on the BPNSFS and not on scores within need supportive teaching or within the BPNSFS. These results may be interesting, since some dimensions do correlate significantly with each other, but this is not the focus of this study. Important is to keep in mind that, because of the small sample, significance means only a possible indication of a correlation in a larger sample.

For teacher’s gender, no associations with any outcome variables were found. Teacher years of experience was significantly positively related to dimensional scores on involvement (.659**) as was teachers' age (.513*). Teachers age was negatively related to relatedness frustration (-.548*)

Psychological Need Satisfaction and Need-supportive Teaching

The most striking results were the negative significant relations between the teacher experienced autonomy frustration and the observed support for autonomy (-.529*), involvement (-.577**) and dimensional scores on involvement (-.615**).

We found also a significant relation between frustration for the need of competence and dimensional score on autonomy support (-.516*).

Table 3
Correlations among all studied variables

		Age	Yearsof service	Autonomy support	Autonomy warthing	Structure	Chaos	Involvement	Disaffectio n	Dimensiona l autonomy's	Dimensiona l structure	Dimensiona l involvement	Autonomy f frustration	Competenc e frustration	Relatedness frustration	Autonomy satisfaction	Relatedness satisfaction	Competenc e satisfaction	Dimensiona l autonomy's satisfaction	Dimensiona l competence satisfaction	Dimensiona l relatedness satisfaction	NSTtotal	Dimensiona l scoreBPN SFS	
Age	Pearson Correlation	1																						
	Sig. (2-tailed)		.491*																					
Yearsof service	Pearson Correlation		1																					
	Sig. (2-tailed)			0.033																				
Autonomy support	Pearson Correlation			1																				
	Sig. (2-tailed)				0.068																			
Autonomy warthing	Pearson Correlation				1																			
	Sig. (2-tailed)					0.048																		
Structure	Pearson Correlation					1																		
	Sig. (2-tailed)						0.140																	
Chaos	Pearson Correlation						1																	
	Sig. (2-tailed)							0.319																
Involvement	Pearson Correlation							1																
	Sig. (2-tailed)								0.348															
Disaffectio n	Pearson Correlation								1															
	Sig. (2-tailed)									0.114														
Dimensiona l autonomy's	Pearson Correlation									1														
	Sig. (2-tailed)										0.127													
Dimensiona l structure	Pearson Correlation										1													
	Sig. (2-tailed)											0.110												
Dimensiona l involvement	Pearson Correlation											1												
	Sig. (2-tailed)												0.331											
Autonomy f frustration	Pearson Correlation												1											
	Sig. (2-tailed)													0.195										
Competenc e frustration	Pearson Correlation													1										
	Sig. (2-tailed)														0.308									
Relatedness frustration	Pearson Correlation														1									
	Sig. (2-tailed)															0.071								
Autonomy satisfaction	Pearson Correlation															1								
	Sig. (2-tailed)																0.346							
Relatedness satisfaction	Pearson Correlation																1							
	Sig. (2-tailed)																	0.515*						
Competenc e satisfaction	Pearson Correlation																	1						
	Sig. (2-tailed)																		0.137					
Dimensiona l autonomy's satisfaction	Pearson Correlation																		1					
	Sig. (2-tailed)																			0.283				
Dimensiona l competence satisfaction	Pearson Correlation																			1				
	Sig. (2-tailed)																				0.121			
Dimensiona l relatedness satisfaction	Pearson Correlation																				1			
	Sig. (2-tailed)																					0.247		
NSTtotal	Pearson Correlation																					1		
	Sig. (2-tailed)																						0.037	
Dimensiona l scoreBPN SFS	Pearson Correlation																						1	
	Sig. (2-tailed)																							0.186

We also checked the relation between teachers scores on the six subscales of the BPNFS and dimensional scores on need-supportive teaching. Only experienced autonomy frustration was related to total score on need-supportive teaching (-.630**).

Surprisingly, for none of the teacher experienced support or frustration dimensions, a significant relationship with structure/chaos aspects of need-supportive teaching was observed.

We also related the dimensional scores on the thwarting and supportive behaviors: autonomy-support, structure and involvement to the dimensional scores of the teachers on the BPNFS. Teachers' own experienced fulfilment of the dimensional score on autonomy was positively related to teachers' sum score for the teaching dimension involvement (.589**). Teachers' dimensional score on satisfaction of the need for competence was positively related to the dimensional score on autonomy supportive teaching (.490*). In table 3 we also see correlations among total satisfaction of basic psychological needs of the teacher and total need-supportive teaching behaviour. There was a significant (.551*) relationship between these total scores.

4. Conclusions and Discussion

The aim of this observational study was to complement past work on need-supportive teaching. Most studies on need-supportive teaching are based on reports of students or teachers' self-reports. Far less research has been done to identify precedents of teachers' need-supportive teaching. This observational study aims to complement (self-)reported studies since it gains higher ecological validity, as real classes and teachers real-life need-supportive teaching are registered (Haerens et al, 2013). This study demonstrates that the quality of teachers' motivation might indeed affect how they interact with their students: especially, we see negative relations between the teachers' experienced autonomy frustration and the observed support for autonomy and involvement.

4.1. Conclusions on observed need-supportive teaching behaviour

The present study gives insight in which need-supportive teaching behaviours are observed in an innovative learning environment in higher education. Some of the dimensions were never or seldom observed, which can give indications on the usefulness of the rating sheet.

In this sample, namely disaffection and chaos were seldom observed. A possible explanation for the fact that disaffection was hardly observed, might be that in the field of applied psychology, good relations with students is a well-known, important factor for the teachers.

Rating structure versus chaos, it became clear that structure is observed, and chaos is seldom observed. A possible explanation is, that in the old curriculum the teachers of Applied Psychology were used to use a lot of structure in their classes. Although they are working in the new didactical framework, they can still use their old teaching practices.

As described in the results, of most dimensions some of the components were never observed. This might be an indication of the irrelevance of some of the components, but due to the small sample it is difficult to do statistical tests to check the validity and reliability of the rating sheet. Since the

rating sheet is relatively new and only validated by the developer of the rating sheet (Stroet, Opendakker en Minnaert, 2015), this could add value to the usefulness of the rating sheet.

Using the rating sheet, it also became clear that it was difficult to differentiate between some dimensions of different teaching behaviours. For example, the difference between autonomy supportive teaching component *Respect-Listening and responding to students' feelings, thoughts, perspectives and complaints* and Teachers involvement component *Attunement-showing understanding of what is of important for the students*, was difficult to make. Also within dimension involvement it was difficult to differentiate between components *Dedication of resources-being available to all students in class* and *Dependability-being available to offer support and showing commitments to students learning*.

Autonomy thwarting component *Disrespect- Not allowing differences in opinion, complaints, or negative effect* and Disaffection component *disaffection-talking in an unfriendly tone, showing lack of interest, communicating that students do not belong, treating students unfairly and as unimportant* were difficult to differentiate. It is relevant to do more checks on internal consistency in next studies using the rating sheet.

4.2. Conclusions on relations between teachers' basic psychological needs frustration and satisfaction and observed need-supportive teaching

The main aim of this study was to investigate a possible relationship between experienced psychological need satisfaction of teachers and their need-supportive teaching. The results of this study notably advance research on motivational classroom practices, because we used observational measures instead of students' or teachers' perception (Stroet et al, 2015). The present findings demonstrate that the quality of teachers' motivation might not only affect their own well-being at work, but teachers' motivation indeed also can reflect on how they interact with their students, as it was earlier confirmed in the study of Abós (2018). Especially, we see negative relations between the teachers' experienced autonomy frustration and the observed support for autonomy and involvement and total need-supportive teaching. In addition, the negative relation between frustration of the need of competence and autonomy supporting teaching. support this idea: Teachers who feel less frustrated in terms of the basic psychological needs of autonomy and competence, seem to teach more need-supportive. These results confirm that BPN satisfaction is related to motivation and especially that when teachers feel less satisfied in the need for autonomy, they are more likely to teach as a result of pressured reasons (Ábos et al, 2018). We see teachers' own experienced fulfilment for the need of autonomy was positively related to teachers' involvement. This also is in line with research that shows that teachers who are motivated, teach more students centred (Hein, Ries, Pires, Caune, Emeljanovas, Heszterane, and Valantiniene, 2012).

In the current situation, a new curriculum was implemented and teachers who did not feel competent indeed showed less autonomy supportive behaviour. Teachers' fulfilment of need for

competence was positively related to autonomy supportive teaching. This is in line with earlier research of Katz and Shahar (2015) who describe the teachers own motivation to teach as essential to their motivating style: teachers who teach out of enjoyment and understanding of their importance and role tends to opt for a more autonomy supportive motivating style. Also, teachers who experience a higher degree of support of the basic psychological needs are more confident in their own ability to effectively face changes in their job and exhibit more innovative behaviour (Klajnsen et al, 2018).

In this study, no significant relations were found between own reported frustration or satisfaction of basic psychological needs and structure/chaos provision of the teacher. We hypothesize that this might be the case because all teachers, in little variations, hardly showed any chaos and a lot of structure.

Total satisfaction of basic psychological needs of the teacher and total need-supportive teaching are positively related what is also in line with earlier research (Katz en Shahar, 2015; Klajnsen et al, 2017). This implies again that teachers' own need satisfaction influences their motivating behaviour in classroom (Aelterman, 2014).

It also became clear teachers who have more years of service at applied psychology showed more satisfaction of the basic psychological need for relatedness. This is in line with research of Oshagbemi (2000) on university teachers: satisfaction at work correlates with years of experience on the job. This might be explained by the fact that if teachers know their environment and know their colleagues better, they indeed feel more satisfaction of the basic psychological need relatedness (Oshagbemi, 2000).

4.3. Implications for practice

The present findings confirmed that the quality of teachers' motivation not only affects their own well-being at school, but also reflects how they interact with their students (Ábos et al, 2018).

The teachers in this study engaged not often in need-thwarting teaching what can be considered as a positive result. From the need-thwarting behaviors, only autonomy thwarting behavior was observed more regularly. From the area of parenting, we know that controlling parents who do not give autonomy, represent a strong and robust predictor of maladaptive outcomes (Kins, Soenens & Beyers, 2012). It is important to stimulate teachers to behave as need-supportive as possible towards their students, always keeping in mind that individual needs of the students for autonomy, competence and relation can differ (Van Yperen, Wörtler en de Jonge, 2016).

This has important implications for the teachers themselves, but also for managers in education. Managers should be supportive of teacher's autonomy by listening to their concerns and giving them opportunities to make their own professional choices and decisions and it is also important they feel competent to act successfully (Klajnsen et al, 2018). Especially in new curricula and innovative learning environments, this is important. Feedback could be a good instrument to support teacher's autonomy and competence, but only if it is supportive (Klajnsen et al, 2018).

4.4 Limitations and recommendations for future research

The current study is not without limitations and they have to be mentioned. The first limitation of the current study is the small group of teachers that was observed. Due to the small sample size, we cannot say anything about a wider range of teachers. A suggestion for future research would be to replicate the study with a bigger sample size in the same, but also different school contexts.

The second limitation is that there was only one observer. It is known that there is often a low inter-rater reliability for the observations of need-supportive teaching, because observer bias can occur (Aelterman et al, 2013). As Stroet (2015) already concluded, the hard part is that *“need-supportive teaching is not considered to exist in a prescribed set of techniques and strategies but always should be considered in the context”*. This implies a high degree of interpretation by the observers and the coders. Future research, with multiple observers and coders, is needed to investigate if the rating sheet in this context indeed is valid and reliable.

The third limitation, as described in the results, is the fact that the observer experienced difficulties in differentiating between some of the 22 components, which make reliable and valid observations difficult. Some of the components were never observed. Suggestion is to check the reliability of the items in the rating sheet. Also, the fact that the name of one dimension is ‘disaffection’ and one of the components of that dimension is also called ‘disaffection’ influences the validity and reliability of the observation because this appeared confusing for the observer. Further research is needed to investigate whether further revisions of the components are possible to do more valid and reliable observations.

The fourth limitation is the fact that results are based on calculated averages. This is done in previous studies on observations of need-supportive teaching (Van den Berghe et al, 2013; Stroet et al, 2015), but questions arise if calculated averages represent valid and reliable how need-supportive the teacher behaves. Short intervals of need-supportive teaching can mask intervals of none need-supportive teaching or even need-thwarting teaching. Interesting is that the averages were compared with the global impression of the need-supportive teaching of the observer and that it were almost always the same scores on the dimensions. Future research can complement on how to choose right ways to register the observations.

The fifth limitation is the possible influence of the videos and cameras in the classrooms on the behavior of the teachers and students. Although it was emphasized that video material would be processed anonymously, it might have still had influence. Despite the limitations, the findings in this study advance research on need-supportive teaching, because of their high ecological validity. This study provides insights into the value of the use of observations. The possible relations between teachers’ basic psychological need satisfaction and frustration and their teaching behavior should be further analyzed in research: this kind of research gives opportunities to enhance our knowledge about the role of motivation of teachers themselves in their teaching behavior.

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Appendix I: rating sheet need supportive teaching (Stroet, 2013)

Teachers autonomy support/thwarting	
<p>Choice Creating opportunities for students to work in their own way and incorporating their interests curiosity, or sense of challenge into the lesson</p> <p>Fostering relevance Meaningfully connecting the learning activity to a goal that is of personal value to the students</p> <p>Respect Listening and responding to students feelings , thoughts, perspectives and complaints</p>	<p>Control Keeping possession of the learning material, providing solutions before students have time to reflect by themselves, exerting pressure, or disrupting students natural rhythm by not allowing them to realise their action plans</p> <p>Forcing meaningless activities Actively attempting to compel students to do things they find boring or meaningless or connecting the learning activity to an extrinsic goal</p> <p>Disrespect Not allowing differences in opinion, complaints, or negative effect</p>
Teachers provision of structure/chaos	
<p>Clarity Clear organisation that includes communicating clear and consistent guidelines and being available when students have questions on task management CPL</p> <p>Guidance Being available to answer questions and content CPL and providing step-by-step directions were needed, thereby adjusting to the students</p> <p>Encouragement Fostering non-competitive learning structures, fostering views that success in learning activities on internal controllable factors rather than inborn talent, and demanding effort</p> <p>Informational feedback Providing constructive, non-comparative feedback. focused on helping students gain control over valued outcomes</p>	<p>No clarity No clear organisation or not being available when students have questions on task management CPL</p> <p>No guidance Not being available to answer questions on content CPL and clearly not monitoring or adjusting to students level of comprehension</p> <p>Disencouragement Fostering competitive learning structures, fostering students few that success in learning activities depends mostly on inborn talent, not demanding effort, or treating for performance judgementally</p> <p>Evaluative feedback Providing comparative feedback focused on evaluating students' performance, or feedback with a controlling locution: 'good you did just as you should'</p>
Teachers involvement/disaffection	
<p>Affection Showing warmth, demonstrating interest, fostering a sense of connectedness by encouraging empathy and prosocial behaviour, and treating students fairly and important</p> <p>Attunement Showing understanding of what is of important for the students</p> <p>Dedication of resources Being available to all students in class</p> <p>Dependability Being available to offer support and showing commitments to students learning</p>	<p>Disaffection Talking in an unfriendly tone, showing lack of interest, communicating that students do not belong, treating students unfairly and as unimportant</p> <p>No attunement Showing no understanding of what is important for the students</p> <p>No dedication of resources Not being available to all students, appearing occupied with other things, or walking out of the classroom</p> <p>No dependability Clearly not being able to offer support and showing no commitment to students learning</p>
<p>Dimensions are coded per teacher student interaction, unless indicated otherwise</p>	