# Fulfilment of the basic psychological needs of student teachers during their first teaching experiences

Frits Evelein[a,*], Fred Korthagen[a,b], Mieke Brekelmans[c]

[a]*IVLOS Institute of Education, Utrecht University, P.O. Box 80127, 3508 TC Utrecht, The Netherlands*
[b]*CETAR, The Centre for Educational Training, Assessment and Research, VU University Amsterdam, The Netherlands*
[c]*Department of Pedagogical and Educational Sciences, Utrecht University, Utrecht, The Netherlands*

## Abstract

This study focuses on an under-researched area, namely the fulfilment of basic psychological needs of student teachers during their first teaching experiences. Based on the Self-determination Theory of Ryan and Deci [(2002). Overview of self-determination theory: An organismic dialectical perspective. In E.L. Deci, R.M. Ryan (Eds.), Handbook of self-determination research (pp. 3–33). Rochester: The University of Rochester Press] and the work of Epstein [(1998a). Cognitive-experiential self-theory: A dual-process personality theory with implications for diagnosis and psychotherapy. In R.F. Bornstein, J.M. Masling (Eds.), Empirical perspectives on the psychoanalytic unconscious (pp. 99–140). Washington, DC: APA; (1998b). Constructive thinking: The key to emotional intelligence. Westport: Praeger], it could be demonstrated that need fulfilment has a strong influence on student teachers' teaching experiences, especially in a non-rational way, for instance through feelings and images. Thwarting of the needs appears to be correlated with images showing *fight*, *flight*, and *freeze* tendencies, whereas need fulfilment concurs with *flow* tendencies. The fulfilment of the need for *competence*, *relatedness*, and *autonomy* in student teachers is considerably less than in experienced teachers. We discuss the consequences for research in this field, and recommendations for teacher education.
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## 1. Introduction

Directly after teaching a lesson, student teachers often say things like: "I feel under pressure like being pressed against a wall", "I feel like being on a soapy slope", and "I feel like keeping a leaden ball in the air all the time", but also "I feel like a fish in the water", "I have a feeling of dancing on roses", and "I feel like a tranquil pond". Through such sentences, they express feelings ranging from resistance, powerlessness, fatigue in teaching, to no problems and self-confidence.

These kinds of such expressions of emotions by student teachers encode reality in terms of images and metaphors. This coding of reality is typical for the experiential processing of human beings. A basic assumption of Epstein's (1998b, p. 9) is that human beings operate using two mind systems: an *experiential* and a *rational* system. The *experiential system* learns directly from experience, is preconscious, operates automatically, and is intimately associated

*Corresponding author. Tel.: +31 30 2534494.
*E-mail address:* f.g.evelein@uu.nl (F. Evelein).

with emotions. The *rational system*, which operates according to logical inference, is conscious, deliberative, and relatively emotion-free. The *experiential system* has a strong influence on human behaviour and operates in a concrete, associative, and automatic manner, using stereotypes and generalisations, coding reality in images, metaphors, and narratives (Epstein, 1990, 1998a, 1998b). The *experiential* system learns directly from experiences and is characterised by a quick processing of stimuli (Epstein, 1990).

In the context of teaching and teacher education, the experiential system has until now attracted little attention from researchers. Since the 1980s, the teacher-thinking paradigm, which emphasises the rational system of teachers, has had a considerable influence on the research into teachers and teaching. It builds on the assumption that teachers' thinking guides their behaviour, and that they take conscious decisions during their teaching (Clark, 1986), based on the theories about learning and teaching they have in their minds. Several authors, such as Elbaz (1991), Eraut (1995), Korthagen and Lagerwerf (1996), and Yinger (1986), have questioned this assumption. They point towards results of empirical research demonstrating that especially in situations where there is little time to reflect (so-called *immediate situations*), teachers often make their decisions in a non-rational or non-conscious way (Dolk, 1997; Eraut, 1995).

In the present study, we want to build on this line of research and shift attention away from the rational mind of teachers to their experiential mind. We have decided to take need of fulfilment as the first focal point in our research, since Epstein (1990) emphasises that the fulfilment of needs plays an essential role in the experiential system. Basic needs are implicit orientations towards goals that can be seen as frames for a whole spectrum of processes. Because we expect the first teaching experiences of student teachers to have a strong impact on their experiential system, we decided to study how the fulfilment of basic psychological needs influences this phase of their teaching career.

## 2. Theoretical framework

### 2.1. Basic psychological needs

In studying basic psychological needs, we build on the Self-Determination Theory (SDT), which is one of the most elaborated and well-researched theories on the role of needs in human beings (Deci & Ryan, 2000; Ryan & Deci, 2002). The SDT distinguishes three basic psychological needs: the need for *competence*, for *relatedness*, and the need for *autonomy*. According to Deci and Ryan (2000, 2002), fulfilment of these basic psychological needs is essential to psychological health and growth, to intrinsic motivation, to the experiencing of well-being, optimal functioning, and self-actualisation.

The conceptualisation of the need for competence within the SDT is based on the notion of *effectance motivation* of White (1959, in Elliot, McGregor, & Trash, 2002, p. 361) It implies that organisms are born with the urge of wanting to influence their surroundings, to control their environment and of attempting to be capable. We see the same phenomenon in student teachers: they want to feel competent in managing their classrooms. Situations in which these needs are thwarted produce a spectrum of effects directed towards compensation. Examples mentioned by Skinner and Edge (2002, p. 308) are withdrawal from action, experiencing uncertainty or anxiety, and an orientation towards moving away from the situation.

The need for *relatedness* refers to the longing for the experiencing of positive relations and for engagement with others. Relatedness is the feeling of a person to care about others and have others care about him or her, and the feeling of belonging to a group or community (Baumeister & Leary, 1995; Ryan, 1995; Ryan & Deci, 2002). When this need of student teachers is fulfilled during teaching, they experience the feeling of contact and a positive connection to their pupils, and also manifest behaviour reinforcing this (Evelein, 2005). Skinner and Edge (2002, p. 308) point to a spectrum of reactions when the need for relatedness is thwarted, such as withdrawal, sadness, but also aching for contact and active connecting. Such reactions are directed towards improving adjustment, avoiding further decrease of need fulfilment or compensation.

The need for autonomy as used within the SDT, is interpreted as the experience of self-determination and points towards volition, the longing of an organism to organise experiences and behaviour and to act in harmony with the self-image (deCharms, 1968; Deci, 1980; Deci & Ryan, 2000, p. 231; Ryan, Kuhl, & Deci, 1997; Sheldon & Elliot, 1999). Autonomy refers to the need to express the authentic self, and to experience the self as the source of action (Ryan, 1995; Ryan & Deci, 2002; Skinner et al., 2002, p. 298). If this need is fulfilled

while teaching, student teachers experience a feeling of being authentic, space for their ideas and choices, and have a strong sense of personal and professional development (Evelein, 2005). Skinner and Edge (2002, p. 308) mention some expected reaction patterns in situations when opposition or confrontation thwarts the need for autonomy, such as a self-protective orientation, a defensive attitude, and indignation. When the need for autonomy is put under heavy pressure, patterns such as resistance, a fighting attitude and anger are to be expected.

When Skinner and Edge (2002) summarise these patterns caused by suppression of the basic psychological needs, they name them *fight*, *flight*, and *freeze* patterns. Fight is the tendency to resist the circumstance; flight is the tendency of to withdraw from the situation; and freeze is the tendency of not acting. When basic psychological needs are fulfilled, there is adaptation, adjustment, growth and optimal experience such as flow (Csikszentmihalyi, 1990; Ryan & Deci, 2000). There is an open contact with the environment, and the action tendencies are geared towards further fulfilment (see Table 1). On the other hand, thwarting or non-fulfilment of the basic needs leads towards compensation and an orientation towards making the best of it, with the aim of no longer experiencing thwarting and/or preventing further suppression.

Epstein (1990) emphasises that such orientations are generally non-rational and are active in the experiential system as wholes of affective experiences, images, associations, attitudes, and automatic processes.

## 2.2. Fulfilment of basic psychological needs of (student) teachers

Because the three basic psychological needs, *competence*, *relatedness*, and *autonomy*, are seen as essential orientations on which the functioning of the experiential system is mainly based, it is to be expected that fulfilment or thwarting of the basic needs during the teaching of (student) teachers show effects comparable to those found in general psychological research (Deci, Connell, & Ryan, 1989; Deci & Ryan, 2000, 2002). This research shows that the essence of need fulfilment is a spectrum of beneficial effects on functioning, and that thwarting the needs leads towards hindering compensations and a decline of adjustment.

Table 1
Indications of the level of need fulfilment

| Level of need fulfilment | Some indications |
|---|---|
| No or low level of fulfilment of the three basic psychological needs | *Flight* (low competence), *fear* (lack of competence), *freeze* (low relatedness), *fight* (low autonomy) (Skinner & Edge, 2002). |
| | Defending, standing firm, indignation, and protection (low autonomy fulfilment) (Skinner & Edge, 2002). |
| | Unpredictability, feeling threatened, and the experiencing of chaos (especially with low competence) (Deci et al., 2000, 2002; Epstein, 1998a; Skinner & Edge, 2002). |
| | Lack of feeling contact, no connection (low relatedness) (Deci et al., 2002). |
| | Lacking self-confidence, not experiencing well-being, no vitality, stagnation in growth (low autonomy) (Ryan et al., 2000). |
| | Experiencing heavy resistance, feeling flooded (low autonomy) (Deci et al., 2002; Pelletier et al., 2002; Ryan et al., 2002a). |
| | Negative emotions: uncertainty, doubt, anger, sadness, fear (Epstein, 1998a; Miserandino, 1996; Patrick et al., 1993; Reis et al., 2000a; Sheldon et al., 2001a). |
| High level of need fulfilment | Flow experiences (Deci et al., 2000), feeling of floating, drifting, joy, feeling uplifted, warmth, lightness (through fulfilment of competence (Csikszentmihalyi, 1990), but autonomy fulfilment deepens this experience (Ryan & Deci, 2000). |
| | Vitality (fulfilment of autonomy and competence) (Ryan & Deci, 2000; Nix et al., 1999). |
| | Self-confidence, feeling of wholeness, integrated self-confident, psychological growth, and self-actualisation (autonomy fulfilment) (Ryan, 1995). |
| | Pleasant emotions, and absence of negative emotions (fulfilment of all three basic needs) (Deci et al., 2000; Ryan & Deci, 2000; Sheldon et al., 2001a). |
| | Openness (fulfilment of all basic needs), adaptation (Reis et al., 2000), and engagement (relatedness) (Ryan & Deci, 2000). |
| | Experiencing security (especially fulfilment of competence and relatedness) (Epstein, 1998a; Ryan & Deci, 2000). |

Until now, hardly any research has been conducted into the fulfilment of basic psychological needs in teachers. We have only found a few studies. Reeve, Bolt, and Cai (1999) studied student teachers in a one-to-one teaching situation within a laboratory setting. They showed that when the level of autonomy is low, student teachers feel pressured; they lose their motivation, and experience a decrease of positive emotions and contact with the students. They become controlling and less socially engaged. When the need for autonomy is fulfilled, the studied student teachers experience positive emotions, and are oriented towards the fulfilment of the need for autonomy in their students. Pelletier, Séguin-Lévesque, and Legault (2002) point to the fact that the thwarting of the need for autonomy in experienced teachers is correlated to an increase of control, a decrease of pleasure and motivation, and a decrease of autonomy support given to their students. The results of these two studies with teachers points towards equal tendencies as seen in more general psychological research on need fulfilment, and they support the scientific relevance of the research in this area.

# 3. Research question

Given our aim to start a first exploration of the experiential mind of teachers, we formulated the following general research question: *What is the level of fulfilment of basic psychological needs of student teachers during their first teaching experiences?*

The following subquestions have guided our study:

1. What is the average level of fulfilment of basic psychological needs of student teachers during their first teaching experiences?
2. What are the differences in levels of fulfilment of basic psychological needs between student teachers, between classes, and between lessons?
3. Does the level of fulfilment of basic psychological needs of student teachers change during their first teaching experiences?

# 4. Method

## 4.1. Participants

The research study was conducted with student teachers of the pre-service post-graduate teacher education programme at Utrecht University. The sample was composed of 36 student teachers, 23 women and 13 men, who during the period of our study were all teaching for the first time. They did so in different schools, between 10 and 20 lessons per week, with no supervisor attending their lessons. These 36 student teachers were recruited from two cohort groups of student teachers ($N = 46$), and participated voluntarily. At the start, they were asked to participate in a research study that would look at the experiences and feelings of student teachers while for the first time teaching on their own. We compared the research population with other groups of student teachers ($N = 114$) on *programme* (there were other students taking part in an in-service programme), *discipline* (subject), and *gender*. Two-sided testing showed no significant differences (programme: $\chi^2 = 2.733$, $p = .098$; subject: $\chi^2 = 3.678$, $p = .159$; gender: $\chi^2 = .004$, $p = .950$).

## 4.2. Instrumentation

To establish the level of fulfilment of basic psychological needs in student teachers, we developed a questionnaire (Basic Psychological Needs Questionnaire, BPNQ) based on a questionnaire used by Sheldon, Elliot, Kim, and Kasser (2001). It consisted of three scales with a total of 13 items. The first subscale for measuring *competence* consisted of five items, the second subscale for *relatedness* and the third subscale for *autonomy* each consisted of four items (see Table 2). The student teachers scored these items on a five-point scale, ranging from 1 (applies not at all) to 5 (applies completely). All questions of this questionnaire where preceded with the phrase "*During this lesson I felt*:". This was purposely done to connect to the student teachers feelings and experiences and so to their experiential system.

The validity of the three scales was supported by a test asking 15 teacher educators and researchers, and 10 student teachers (who did not participate in the subsequent data collection) to group the 13 items into three categories (*competence*, *relatedness*, and *autonomy*). Each of the scales showed a strong internal consistency (Competence $\alpha = .90$, Relatedness $\alpha = .80$, and Autonomy $\alpha = .82$, $N = 417$). Results of an exploratory factor analysis (principle component analysis, varimax rotation) also supported the three-factor structure of the questionnaire. All items loaded significantly on their target factor ($> .62$). We found various cross loadings of items, but all of them were below .40. Correlations

Table 2
Basic psychological needs questionnaire

| Need | Items |
| --- | --- |
| | During this lesson I felt…. |
| Competence | that I was successful in completing difficult tasks[a] |
| | that I was taking on and mastering hard challenges[a] |
| | very capable in what I did[a] |
| | very skilled in teaching |
| | that I used my qualities successfully |
| Relatedness | a connection with the pupils |
| | a good relationship with the pupils |
| | a bonding with the pupils |
| | that the pupils liked me |
| Autonomy | that my choices were based on my true interests and values[a] |
| | free to do things my own way[a] |
| | that my choices expressed my ''true self''[a] |
| | that I felt free to make decisions that were in complete harmony with myself[a] |

[a]Items based on Sheldon et al. (2001).

Table 3
Level of fulfilment of the need for competence, relatedness, and autonomy of experienced teachers ($N = 23$)

| | Experienced teachers | |
| --- | --- | --- |
| | M | SD |
| Competence | .73 | .12 |
| Relatedness | .80 | .09 |
| Autonomy | .75 | .11 |

between the subscales were fairly high (*Competence–Autonomy* .74, *Competence–Relatedness* .63 and *Relatedness–Autonomy* .60), and somewhat stronger than reported in other research (cf. Reis, Sheldon, Gable, Roscoe, & Ryan, 2000).

For each of the three scales, scores on the individual items were averaged. Scores vary from 0 to 1. A higher score represents a higher level of fulfilment of that particular basic need.

To be able to interpret these scores of student teachers in terms of high and low levels of fulfilment, we collected the following additional data.

1. The questionnaire was also administered to a group of 23 experienced teachers, who filled it in right after teaching a lesson. On average, the level of fulfilment of these teachers turned out to be above .70 for all three basic psychological needs (Table 3).
2. We also gathered data on student teachers' images of the lessons they reported on regarding their need fulfilment. We did so by asking student teachers the following question: ''Give an image or association which matches your experience during this lesson''. Based on Epstein (1990,

1998a, 1998b), we hypothesise such images to be an indication of the level of fulfilment of basic psychological needs. We expect that such images show *fight*, *flight*, and *freeze* tendencies corresponding to a low level of need fulfilment (Skinner & Edge, 2002), and that they represent flow tendencies corresponding to a high level of fulfilment (Csikszentmihalyi, 1990; Ryan & Deci, 2000, see also Table 1).

The 36 student teachers reported 299 images, 160 of which had an emotional loading, and 139 a more descriptive character. The images with an emotional loading were divided into three groups: (a) images showing fight, flight or freeze tendencies, (b) images showing flow tendencies, (c) images in between. Images in this last category express investing much effort, as well as success, experiencing resistance but also progress, the feeling of being on top of things, but also the need for some safety.

The inter-rater reliability of this categorisation turned out to be high (Cohens $\kappa = .93$). To calibrate the basic need scores of student teachers, we added the three scores corresponding to the same lesson as the reported image. Table 4 shows some salient examples of lesson images with the corresponding levels of need fulfilment.

Based on the results of the experienced teachers, and the comparison of student teachers' lesson images with their need fulfilment scores, we designated scores of student teachers between 0 and .49 as low fulfilment, between .50 and .69 as moderate fulfilment, and .70 and higher as high fulfilment. Given these perimeters, 90% of the images appear to correspond with scale scores falling into the same category (low, moderate, high) for all three scales. With 10% of the images, one of the need fulfilment scores is in an adjacent category.

Table 4
Some salient/prominent examples of lesson images of student teachers in relation to their level of need fulfilment

| Image | Level of need fulfilment | | |
| --- | --- | --- | --- |
| | Competence | Relatedness | Autonomy |
| *Fight/flight/freeze tendencies* | | | |
| As in a dream, wanting to scream but you can't | .00 | .31 | .25 |
| Lost in a dark forest | .15 | .38 | .44 |
| Like a derailed train which can't be put back on track easily | .20 | .13 | .13 |
| Fighting a losing battle | .25 | .38 | .25 |
| As a sardine in a tin filled to the brim | .40 | .44 | .44 |
| As a black box carrying a lock | .40 | .38 | .44 |
| *In between* | | | |
| I feel oppressed as with a forthcoming thunderstorm in sultry weather | .50 | .56 | .56 |
| As a sailor trying hard to catch the wind in his sails and progressing, although not as smoothly and quickly as he wanted (sometimes the wind catches the sail on the wrong side) | .50 | .63 | .63 |
| As on a cycling trip through the polder with strong headwinds | .60 | .56 | .63 |
| As when swimming with a rubber ring, but not daring to take it off | .55 | .50 | .69 |
| I feel like swimming on my back | .60 | .63 | .50 |
| As in the reconstruction period after a war | .60 | .63 | .69 |
| *Flow tendencies* | | | |
| Floating on the water | .70 | .75 | .69 |
| Rowing a boat on a quietly rippling river | .70 | .75 | .75 |
| Dancing on roses | .75 | .75 | .75 |
| I feel like a fish in the water | .75 | .75 | .75 |
| A babbling stream of a small mountain river | .75 | .94 | .94 |
| A well operated train | .95 | .81 | .81 |

### 4.3. Procedure

The data collection was conducted during a period of 14 weeks (September–December), divided into three segments of 2 weeks each. After teaching a lesson, the participants were asked to fill in a questionnaire, containing both the BPNQ and the request for an image. They were asked to do this 18 times in the 14-week period. They had to select three different classes for which they had to fill in the questionnaire after six individual lessons. The total amount of questionnaires returned by the 36 participating student teachers was 417. On average, each student returned 11.5 questionnaires (varying from 2 to 19). We found no significant correlations between non-response and the level of need fulfilment (autonomy: $r = .16$, $p = .09$; competence: $r = .17$, $p = .08$; relatedness: $r = .00$, $p = .99$).

### 4.4. Method of analysis

To analyse the data collected with the BPNQ, we used multilevel models (Bryk & Raudenbusch, 1992; Snijders & Bosker, 1999). One of the advantages of

using these models to analyse longitudinal data (in comparison with for instance the use of repeated measures analysis of variance) is that missing data on a specific occasion do not lead to the exclusion of student teachers in the analysis. A three-level model has been used (lessons, within classes, within student teachers).

## 5. Results

### 5.1. Average level of fulfilment of the basic psychological needs of student teachers

In Table 5, the results of the multilevel analysis are presented.

Table 5 shows that all three basic needs have an average level of fulfilment higher than half the maximum score (1.0). Using the images of the student teachers, we were able to conclude that these average scores correspond with a moderate level of fulfilment. Experienced teachers have a far higher level of need fulfilment than student teachers (see Table 3).

Table 5
Average level of fulfilment of the basic psychological needs of student teachers ($N = 36$) during the 14 weeks of independent teaching

| Basic psychological need | $M$ | SE | SD |
|---|---|---|---|
| Competence | .57 | .02 | .15 |
| Relatedness | .61 | .01 | .14 |
| Autonomy | .57 | .02 | .16 |

$M$ = mean, SE = estimation error, SD = standard deviation.

Table 6
Level of need fulfilment of lesson scores ($N = 417$) of student teachers (in percentages of the lessons)

| | Level of need fulfilment | | |
|---|---|---|---|
| | Low | Moderate | High |
| Competence | 28 | 53 | 19 |
| Relatedness | 24 | 53 | 24 |
| Autonomy | 31 | 51 | 18 |

When grouping the lesson scores of individual student teachers according to the three levels of fulfilment (low, moderate, high, see the Method section), we found that in 51% (autonomy) to 53% (competence and relatedness) of the lessons, student teachers reported a moderate level of need fulfilment. In about 24% of the lessons, the scores correspond to a low level of fulfilment of relatedness, 28% for competence, and 31% for autonomy. In 18% (autonomy), 19% (competence) and 24% (relatedness) of the lessons there is a high level of fulfilment of the basic needs (see Table 6). So, in more than 75% of the lessons, student teachers to some degree reported problems with need fulfilment.

## 5.2. Variance in need fulfilment between lessons, classes, and student teachers

To get an idea of the relative importance of lesson, class, and personal characteristics, we divided variance in need fulfilment into proportions related to lessons, to classes in which student teachers teach, and to student teachers. In Table 7 the results are presented.

Table 7 shows that, in order to explain differences in level of fulfilment of basic psychological needs, lessons (and the times at which they are taught) are most important, followed by personal characteristics, except for the fulfilment of the need for

Table 7
Variance (%) in the level of need fulfilment between student teachers, classes, and lessons

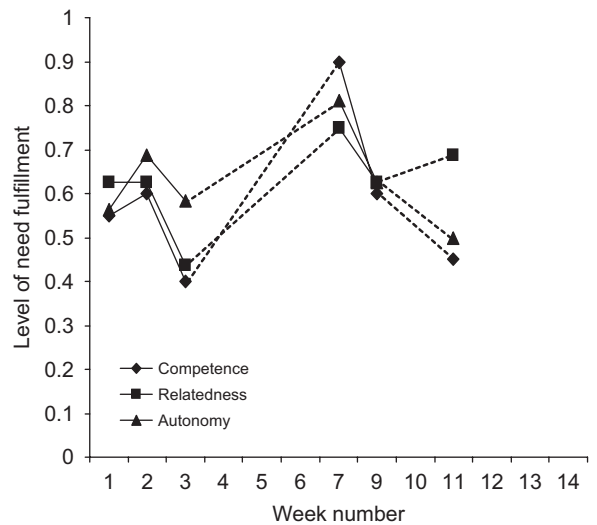| Basic need | % variance between student teachers | % variance between classes | % variance between lessons |
|---|---|---|---|
| Competence | 25.7* | 12.1* | 62.2* |
| Relatedness | 6.8 | 33.9* | 59.3* |
| Autonomy | 28.7* | 23.3* | 48.0* |

*$p < .05$.



Fig. 1. Examples of fluctuation in the level of need fulfilment between lessons in a specific class of a student teacher.

relatedness, where class characteristics are more important than personal characteristics. This supports findings of Deci and Ryan (2000) showing that need fulfilment is largely momentary. This phenomenon is illustrated by Fig. 1, which shows the fluctuation of need fulfilment between various lessons of a student teacher in one of her classes.

## 5.3. Changes in need fulfilment

To analyse whether the level of fulfilment of the basic psychological needs changes during the 14-week period of student teachers' first classroom teaching experience, we compared the fit of two change models (Model 1, a model with a weekly change, without defining this change, and Model 2 with a linear trend) with a model assuming no change (Model 0).

For relatedness, we did not find a better fit for both change models. A possible explanation for this could be that student teachers already have a higher level of fulfilment of this need than for the other needs. Also, for the level of fulfilment of the need for competence, neither Model 1 nor Model 2 fits the data better than Model 0. Although, with Model 2, we see a significant linear increase ($t = 1.712$, $df = 109$, $p = .045$) in the level of fulfilment of the need for competence in the 14-week period, this is not enough to improve the model fit. From the linear increase in 14 weeks, the model predicts an increase of .558 to .606 for an average class. Regarding the level of fulfilment of autonomy, Model 2 fits the data better than Model 0. The linear trend is significant ($t = 2.396$, $df = 109$, $p = .001$). According to Model 2, the fulfilment of the need for autonomy increases from .553 to .611 in an average class.

The increasing level of fulfilment of the need for autonomy shows that, during this period of 14 weeks, student teachers on average experience more latitude for their choices, opinions, and initiatives (cf. Bettencourt & Sheldon, 2001, p. 1141; Sheldon, Ryan, Rawsthorne, & Ilardi, 1997). A student teacher whose growth in the level of fulfilment of the need for autonomy during the first 4 weeks and the final 4 weeks of this period is .06, explains: "*It is a characteristic of my first teaching experience that the autonomy need is thwarted. In the beginning, I was busy just trying to survive. In the beginning, I was insecure and holding back*". When after a few weeks the transition shock is over, this student teacher explains: "*I am now more relaxed, and self-confident in teaching. My feeling of autonomy comes from me being the one who determines what happens. When needed, I'm very decisive*". A student teacher who experienced a growth in competence of .25 between the first and final 4 weeks explains: "*I am the teacher instead of the girl who didn't know anything. Initially, I had the feeling that I knew nothing, I could not do anything, and I was glad when things went well*". Another student teacher with an increase of .13 explains: "*I feel that especially in the final period, I grew from being a student teacher to being a real teacher*".

A student teacher who experienced a change in competence of .35 (relatedness .31 and autonomy .16) says: "The first weeks I was overwhelmed by what the pupils said, now I have grown. I like it much better, I expect more things. Now I see twenty kids instead of seeing just two, which I did at first."

## 6. Conclusions

In this study, we followed student teachers in several lessons taught in three different classes during a 14-week period, studying their level of fulfilment of the three basic psychological needs. We found that, on average, all three basic needs have a level of fulfilment higher than half the maximum score. We designated the average score of student teachers as a moderate level of need fulfilment, using scores of experienced teachers and student teachers' images of lessons as points of reference. Looking at the need fulfilment scores of student teachers in individual lessons, we concluded that in more than 75% of the lessons, student teachers to some degree reported problems with need fulfilment.

As to the variance in need fulfilment, we found that, to be able to explain differences in level of fulfilment of basic psychological needs, lessons (and the times when they are taught) are most important. This influence of situational factors confirms the assumption of the SDT (Deci & Ryan, 2000) that need fulfilment occurs largely in interaction with the environment, and depends on the supportive or non-supportive environmental conditions at a given moment and in a specific situation (cf. also Reis et al., 2000; Vallerand & Ratelle, 2002). We also found that class characteristics have a stronger impact on the variance in fulfilment of the need for relatedness than is the case with the need for competence and autonomy, where personal characteristics are more important.

Finally, during the 14-week period, the level of fulfilment changes in the case of the need for autonomy and the need for competence, probably as a result of gaining experience in being a teacher. However, a period of 14 weeks, which is usually part of Dutch teacher education programmes, seems to be hardly sufficient for most of the student teachers to achieve a substantial increase in the level of fulfilment of the basic psychological needs.

## 7. Discussion

### 7.1. Implications for research

Until now, little was known about the fulfilment of basic psychological needs of student teachers. The present research provides more insight into this problem. The quantitative results show that their psychological needs are to some extent thwarted

during the time of their first teaching experiences. According to Deci and Ryan (2000, 2002) and Skinner and Edge (2002), a consequence of this is less adjustment to the situation than would be the case if the needs were fulfilled. Since the levels of fulfilment of the student teachers' basic psychological needs that we found are much lower than with experienced teachers, we hypothesise that teaching experience is an important factor in raising the level of need fulfilment of teachers. We believe more research, especially in other contexts, is needed to study this hypothesis. This could, for example, shed more light on the question of whether a teacher education programme can enhance the level of need fulfilment and if so, what interventions or programme structures would be beneficial to this.

The images of the student teachers demonstrate that on the one hand the lack of fulfilment corresponds with the experiencing of teaching problems, and on the other hand the fulfilment of the needs corresponds with pleasure and the experiencing of success and flow. The exact relationship of need fulfilment and actual teaching behaviour of student teachers has not been clarified in this study, but, based on the research literature on need fulfilment, we do expect a strong correlation between need fulfilment and teaching behaviour of student teachers (Evelein, 2005).

One of the strengths of this research is that it is embedded in the teaching practice of student teachers, and was not conducted in a laboratory setting, as is the case with the most representative study in this field (Reeve, Bolt, & Cai, 1999). A limiting factor, however, is that the data cover only a few lessons in different classes, which implies that many lessons in-between were excluded. Also, the period of 14 weeks was chosen for pragmatic considerations. What would have been the outcome if student teachers had been monitored during a whole year, or even 3 years? Also as yet unclear is the influence of the repeated use of the same questionnaire (some of the student teachers did it 19 times). In addition, the general degree of fulfilment of the basic needs in the personal life of a student teacher is an aspect that requires attention in follow-up research. Reis et al. (2000), but also Reeve et al. (1999), emphasise that a general pattern of need fulfilment (Vallerand & Ratelle, 2002) affects need fulfilment in specific circumstances. Reversely, it is not clear if the level of need fulfilment during lessons and the changes over time cause a change in the general need fulfilment of the student teacher.

In spite of these limitations, our research seems to confirm that the long-existing emphasis on a rational approach to teaching is a bit too one-sided. Our study shows an important, mainly non-rational role of the experiential system in the functioning of student teachers during their first teaching experiences. Although we have found no clear evidence of a relationship with the actual teaching behaviour of student teachers, we see our results as an incentive for further research in this area. We are thinking of research into the relationship between the need fulfilment of student teachers in lessons and their more conscious cognitions and behaviours in those lessons.

### 7.2. Implications for teacher education

Based on the results, we believe that it is important to approach the professional and personal development of student teachers in an integrated manner (Korthagen, 2004, 2005; Santos Seco, 2002). We see distinct possibilities for enhancing the need fulfilment in student teachers within current approaches in teacher education.

Firstly, to enhance the fulfilment of all needs it is advised to place student teachers in comparatively safe classes, and not to give them classes with a history of problematic behaviours. In this way, student teachers can experience the importance of developing an open and positive interaction with a class. During the teacher education programme, the difficulty level of classes can gradually be raised.

To enhance the fulfilment of autonomy in student teachers, the work of Deci and Ryan (2002, 2002) and Reeve (2002) suggests that it is important to give them opportunities for choice, for pursuing personal goals, values and inspiration, and for related learning activities (cf. Sheldon & Kasser, 2001b). These opportunities may be looked for in the practicum setting, in the curriculum of their teaching school, as well as in the teacher education programme itself (Pelletier et al., 2002).

The need for competence can be supported by providing structure in the learning process and by supporting the student teachers to work on realistic, well-structured learning tasks, phased into clear feasible steps with high chances of success. As positive feedback is important to the fulfilment of the need for competence (Elliot et al., 2002), it is important to focus on successful experiences in coaching (Deci & Ryan, 2000, 2002; cf. Vallerand & Ratelle, 2002). Based on insights from positive

psychology (Seligman & Csikszentmihalyi, 2000), Korthagen (2004) recommends teacher educators to identify personal qualities of student teachers and support student teachers in using these during teaching (see also Korthagen & Vasalos, 2005).

Based on Deci and Ryan (2000, 2002), we may expect experiencing positive relationships with pupils and feelings of sympathy to be important to the fulfilment of the need for relatedness. Hence it seems to be helpful to stimulate student teachers to pay attention to pupil contact, if possible to approach them individually, and to support student teachers in not looking at a class as an undifferentiated mass of for instance "*twenty five sharks headed towards a prey*", as one of the student teachers in our study described it. In addition, broadening the possibilities of influencing the social character of the learning environment (Deci & Ryan, 1985; Krapp, 2002; Skinner & Belmont, 1993), and the use of strategies aimed at increasing involvement and a positive group attitude (cf. Kagan, 1994; Sharan, 1994) can lead towards more fulfilment of the need for relatedness.

Promoting reflection is generally considered important in teacher education. However, until now, need fulfilment seems to have been undervalued as an object for student reflection. Our research suggests that making student teachers more aware of the fulfilment or non-fulfilment of their basic psychological needs may help them in their understanding of what is happening within them on their entry into the profession. The instruments that are being developed in this research, such as the BPNQ, can be used as reflective tools in the education of teachers. Also, student teachers can be asked to bring in images and reflect on these to find their meaning and their influence on the fulfilment of their basic psychological needs. Swennen, Jörg, and Korthagen (2004) give examples of how such images may be used in a teacher education programme. Stated in more general terms, we believe that more attention to the non-rational aspects of becoming a teacher may be beneficial to the effectiveness of teacher education.

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