Measuring student teachers’ basic psychological needs

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In Self-Determination Theory, basic psychological needs for relatedness, autonomy and competence are distinguished. Basic psychological need-fulfilment is considered to be critical for human development and intrinsic motivation. In the Netherlands, the concept of basic psychological need-fulfilment is introduced in the curricula of many teacher education institutes. This study reports on five teacher education institutes for primary school teachers where study coaches made use of a Dutch version of the Basic Psychological Needs Scale (BPNS) to collect data to be used in a discussion with student teachers about their intrinsic motivation for a specific part of the teacher education course. On the basis of the outcomes of this discussion, study coaches and student teachers derived consequences for day-to-day practice in their classrooms. The data which resulted were also used to establish whether the theoretical distinction between three basic psychological needs was found in this sample of student teachers in the Netherlands. The results show that the constructs of relatedness, autonomy and competence were found and could be measured using a 14-item five-point scale, based partly on the original BPNS and partly on new items that focus on different sources of perceived need-fulfilment, namely teacher education in general, the study coach and fellow students.

Keywords: relatedness; autonomy; competence; intrinsic motivation; self-regulation; student teacher

Introduction

In the second half of the 1990s, self-determination theory (SDT) (Deci and Ryan 2000, 2008) was introduced in schools in the Netherlands: in particular, the importance of the basic psychological needs of relatedness, competence and autonomy with regard to the development and well-being of students in primary and secondary education was emphasised (e.g. Stevens 1997). As a result of the attention given to these concepts, many primary and secondary schools in the Netherlands claim to take the students’ basic psychological needs into account when shaping daily practice in their classrooms.

The concept of basic psychological needs is widespread not only in primary and secondary schools but also in teacher education in the Netherlands. Student teachers
are expected to acquire competencies that enable them to tune into the students’ basic psychological needs effectively. Furthermore, in the curriculum, taking the student teachers’ basic psychological needs into consideration is emphasised as a major pedagogic principle (Evelein, Korthagen, and Brekelmans 2008). This focus on student teachers’ basic psychological needs is connected to a growing interest in their motivation, not only in the Netherlands but also in other countries (Filak and Sheldon 2003; Roth et al. 2007), and is often linked to the shortage and the attrition of (student) teachers (Roness and Smith 2010).

In SDT, basic psychological needs are postulated as innate and universal. Fulfilment of these needs is considered to be crucial for human well-being and development in general. For the fulfilment of these needs, people depend on interaction with other people. Effective interaction between people and their social context results in need-fulfilment, and consequently in people’s well-being, development, intrinsic motivation and self-regulation (Deci and Ryan 2002; Deci and Vansteenkiste 2004). Ineffective interaction thwarts need-fulfilment, which has a negative effect on well-being and other emotional factors.

In the past decade, SDT has provided a theoretical framework for research in various domains such as education, medical care (Williams et al. 2005), sport (Hagger and Chatzisarantist 2007), work (Baard, Deci, and Ryan 2004) and psychotherapy (Ryan et al. 2010), resulting in many publications that have contributed to the further development and refinement of the theory and its concepts. Research has also produced many types of questionnaire to measure basic psychological needs and linking concepts such as intrinsic motivation and self-regulation, in particular in adults and adolescents (see www.psych.rochester.edu/SDT).

The study reported here is part of a larger project called ‘Collaborative innovation of schools and teacher education’ (Castelijns, Koster, and Vermeulen, 2009). One of the project’s starting points was to develop a classroom climate that met the student teachers’ basic psychological needs. The assumption was that this would enhance their intrinsic motivation and self-regulation as well as their academic achievement. A strategy was developed which included the collection of data about student teachers’ perceived basic psychological need-fulfilment in the teacher education course they studied. For this purpose, a Dutch version of Deci and Ryan’s Basic Psychological Needs Scales (BPNS, see www.psych.rochester.edu/SDT) was developed and used. The data collected with the Dutch version of the BPNS were used to provide an informed basis for classroom discussion. The teacher and the student teachers jointly discussed the data collected in their own class, made their collective interpretations explicit and derived consequences for daily practice in their course. This strategy was based on the social-constructivist concept of joint construction of meaning by members of a group (Gough 2008; Putnam 2010). Collective construction of meaning assumes that individual and therefore subjective members’ perspectives are combined into a collective and intersubjective perspective (Guba and Lincoln 1989).

This study investigates the validity of Deci and Ryan’s theoretical model with three basic psychological needs. The assumption was that if basic psychological needs are indeed universal, as claimed by Deci and Ryan, then they can be expected to be found in any sample of student teachers in the Netherlands. Testing this assumption was important from a theoretical point of view, because it either supports Deci and Ryan’s theoretical claim or yields alternative hypotheses. Testing this assumption was also important from a practical angle, since teacher
educators, study coaches and trainers, who strive to tune into their student teachers’ needs, need to know which needs can actually be distinguished.

This study focuses on answering the next research question: To what extent do data with regard to perceived need-fulfilment, collected in a sample of Dutch student teachers, support the theoretical distinction between the basic psychological needs for relatedness, autonomy and competence?

**Theory**

The importance of basic psychological needs for the development and well-being of people is extensively described and well documented in SDT (Deci and Ryan 1985, 2000; Ryan and Deci 2000). This theory states that people are, by nature, oriented towards psychological development. Deci and Ryan (2002) define psychological development in terms of an integration of psychological elements (thinking, feeling and acting) and people’s integration or effective interaction with their (social) context. Psychological development is assumed to be propelled by individuals striving for fulfillment of their basic psychological needs for relatedness, competence and autonomy.

Here, the concept of relatedness refers to people’s need to feel connected with other people, to give and receive love, care, affection and friendship. Competence refers to people’s need to perceive themselves as effective in their interaction with their physical and social context. People who feel competent perceive themselves as able to influence their environment effectively and to realise valuable output through their own actions. Competence is strongly related to self-efficacy (Bandura 1997; Bandura and Schunk 1981). Schunk and Pajares (2007) define self-efficacy as one’s perceived capabilities to learn or perform behaviours at designated levels. Self-efficacy refers to the perception of competence in relation to a specific (academic) task.

Autonomy refers to people’s need for self-regulation (Ryan and Deci 2004, 2006). The concept is described by Deci and Ryan (2000, 231) as ‘the organismic desire to self-organize experience and behaviour and to have activity be concordant with one’s integrated sense of self’ (see also Ryan 1995; Sheldon and Elliot 1998). Autonomy has its origin in people’s interaction with their social context where they adopt external values and regulations. This phenomenon is described as a process of internalisation (Ryan and Connell 1989). Values and regulations that originally are external are internalised by individuals, and finally perceived by them as their own (Deci and Ryan 2000; Vansteenkiste et al. 2010). Self-regulation means that individuals direct their own behaviour on the basis of these internalised values and regulations. They perceive the locus of causality of their behaviour as internal to them.

Deci and Ryan connect self-regulation to intrinsic motivation (Ryan and Deci 2000). Activities voluntarily undertaken by people, without any reward or pressure from their environment, are self-regulated. People perceive the locus of causality of intrinsically motivated behaviour as internal to them. They carry out these activities because they find them interesting or because they think they are important (Deci 1975). Lepper, Greene, and Nisbett (1973) point out that extrinsic rewards (reinforcements) even can undermine intrinsic motivation (see also Kohn 1999). People’s intrinsic motivated behaviour is propelled by their need to perceive themselves as competent and autonomous. Vansteenkiste, Lens, and Deci (2006) show that
intrinsic goal framing produces deeper engagement in learning activities, better conceptual learning and higher persistence in learning activities than external or no-goal framing. They theorise that intrinsic goals are more directly linked to the satisfaction of the basic psychological needs for relatedness, competence and autonomy (see also Vansteenkiste et al. 2009).

SDT emphasises that under certain circumstances, such as rejection, over-asking or excessive control, people’s development can be thwarted or de-energised (Martens 2007). Because people, by nature, strive for the fulfilment of their basic psychological needs, they may react by using defensive or self-protective strategies that become manifest as antisocial or self-centred behaviour, evoking more rejection and control from their social environment. Functional and non-functional interactions between people and their social context have a tendency to repeat themselves. Consequently, certain patterns of interaction arise. These patterns show, on the one hand, how people exert an influence on their social context in providing support and need-fulfilment and, on the other hand, how this need-fulfilment is perceived by others and influences their behaviour. Deci and Ryan (2000) point out that healthy psychological development requires the fulfilment of each of the basic psychological needs.

Method

This study’s aim was to find out whether the perceived basic psychological needs for relatedness, competence and autonomy could be found in a sample of Dutch student teachers participating in a course for primary teacher education. To answer this question, a questionnaire was developed and administered to 271 (2008) and 222 (2009) student teachers. A principal component analysis (PCA) (Oost 1999; Garson 2007) was used to discover whether a structure with three factors, referring to the need for relatedness, competence and autonomy, respectively, emerged from the data.

Questionnaire

The original BPNS consisted of three scales that measure basic need-fulfilment in personal relations, at work and in life in general. Because the first two scales consisted of too many items that are irrelevant to student teachers (e.g. ‘I feel like I can make a lot of inputs in deciding how my job gets done’ and ‘When I am with xxx, I feel loved and cared about’), the general version of the BPNS was chosen for translation.

The original general version of the BPNS consisted of 21 seven-point items. Scoring alternatives varied from 1 (not at all true) to 7 (very true). The scale consisted of three subscales, namely autonomy (seven items), competence (six items) and relatedness (eight items). The original BPNS items were phrased in general terms of how respondents perceive need-fulfilment in ‘their life’ or by ‘people they know’. Because this study concerns need-fulfilment within the context of teacher education, the items of the BPNS were adjusted accordingly. Schuman (1996) pointed out that context specificity of the items contributes to the reliability of the instrument. In the adapted version, ‘life’ was translated into ‘teacher education course’, and ‘people’ were made more specific in terms of ‘the study coach’ or ‘fellow students’.
Furthermore, many of the original items were phrased in terms of feelings (e.g. ‘I generally feel free to express my ideas and opinions’). Because of differences in culture (unlike the USA, where the items were first generated, in the Netherlands people are often fairly reticent about expressing their feelings), some items were rephrased in terms of perceptions (e.g. ‘In the teacher education course, I can express my opinions freely’).

In the context of teacher education, the distinction between the teacher educator or study coach, fellow student teachers and teacher education in general as sources of need-fulfilment seemed to be relevant. In Dutch teacher education, student teachers have to collaborate a great deal with fellow student teachers, so the process of collaboration in itself as well as the interaction with the fellow student teachers are important sources of need-fulfilment. For this reason 31 extra items were formulated with regard to this specific situation. These 31 items consisted of 11 items for autonomy, 10 for relatedness and 10 for competence. Together with the 21 (adjusted) original items, a total of 52 items formed the questionnaire for need-fulfilment. So, the original number of 21 items was extended to 52 items to gain information about these different sources (e.g. ‘The study coach offers me positive feedback’, ‘If we work together, my fellow students offer me positive feedback’ and ‘In teacher education, I acquire relevant new skills’).

Most Dutch student teachers are familiar with filling in questionnaires concerning student satisfaction and evaluation of the courses they take, for purposes of quality management. Student evaluation of courses is obligatory for teacher education institutes in the Netherlands. Most of the questionnaires that are used for this purpose have five-point scales. Therefore, in this study the original seven-point scale was changed to a five-point scale.

Respondents
During the period May–July 2008 the questionnaire was completed by 271 student teachers in five different teacher education institutes for primary education (Table 1). A second cohort of 222 different students from the same five institutes filled in the questionnaire during spring 2009. The five institutes cooperated in the project ‘Collaborative innovation of schools and teacher education’. The number of student teachers registered in these institutes varies from 650 to 1500. Some of these institutes are located in cities and have mixed populations with regard to culture and native language, whereas others are situated in rural areas and have a more homogeneous population.

The procedure for data collection was as follows. The study coaches handed out copies in their own classes and gave the student teachers instructions on how to fill

| Teacher education institute | Number of student teachers |
|-----------------------------|-----------------------------|
| D                           | 74                          |
| K                           | 45                          |
| M                           | 37                          |
| I                           | 11                          |
| Z                           | 104                         |
| Total                       | 271                         |
them in. The questionnaire was administered during the lessons and therefore the response rate was 100%. Three questionnaires were removed owing to missing data, as half or more of the questions were not answered. Because of the initial practical aims of the project ‘Collaborative innovation in schools and teacher education’, the respondents do not make up a representative sample of primary student teachers in the Netherlands. Given the research question (‘To what extent do data with regard to perceived need-fulfilment, collected from a sample of Dutch student teachers, support the theoretical distinction between the basic psychological needs for relatedness, autonomy and competence?’), the selectiveness of the sample is considered to be irrelevant considering the universal claim that SDT is applicable to every human being.

**Method of analysis**

Based on Deci and Ryan’s theory, three latent variables (i.e. relatedness, autonomy and competence) can be hypothesised. Latent variables are hypothetical factors that are assumed to be found in the observed variables (Garson 2007). To statistically test a theoretical model, different methods can be used (Hox 1999). Because the items are translated and made more specific for student teachers, an exploratory method such as a PCA with varimax rotation (Garson 2007; Hox 1999; Reise, Widaman, and Pugh 1993) is appropriate.

Deci and Ryan’s model was tested stepwise, using PASW Statistics 18. The first step was a PCA of the 21 translated items. Based on the results, a decision was made on the second step. If indications for confirmation of the theoretical model were found, the three dimensions would be tested more specifically, using a pad analysis like AMOS or Lisrell (Hox 1999). However, when no clear confirmation was found, separate factor analyses, one for each of the theoretical factors, would be carried out to determine whether the separate constructs of autonomy, relatedness and competence are one-dimensional (Hox 1999). If this second step did not give an indication on confirming the dimensions, the factors would be redefined based on the results of an analysis using items from the extended questionnaire. For that purpose, PCA extraction and varimax rotation were used.

**Results**

**Step 1. Factor analysis with a forced three-factor outcome**

Factor analysis (PCA) with a forced three-factor outcome using a varimax rotation on the results of the 21 items was carried out on the data of the student teachers ($n = 271$) who filled in the questionnaire in 2008. This resulted in a percentage of explained variance of 36.64, distributed over three factors (Table 2), with percentages of the explained variance of 14.71, 11.64 and 10.29.

In Table 2, factor loadings above .40 are printed in bold type. Eight items loaded on the first factor, with one below .40. From these items, five with loadings above .40 referred to the construct of relatedness. Two items referred to the theoretical construct of autonomy. In this first factor the relatedness items were dominant. So, the empirical factor (partly) confirmed the theoretical one.
Table 2. Factor analysis and the loadings per item extraction: principal component analyses with varimax rotation with forced three-factor outcome of BPNS ($n = 271$).

| Component                                                                 | 1      | 2      | 3      |
|--------------------------------------------------------------------------|--------|--------|--------|
| r When we work together I get along with my fellow student teachers     | .823   | .077   | .094   |
| r When we work together my fellow students take me seriously            | .653   | -.020  | -.051  |
| r In the teacher education course I get along with the people I come into contact with | .635   | -.036  | -.172  |
| a When we work together, everyone can be themselves                     | .520   | .131   | -.118  |
| a In the teacher education course I can express my opinion freely        | .463   | .085   | -.371  |
| a When we work together I get positive feedback from my fellow students | .459   | .159   | .008   |
| r In the teacher education course I have too few social contact         | -.410  | -.010  | .287   |
| r In the teacher education course I am very much on my own              | -.376  | .026   | .041   |
| a The study coach takes me seriously                                     | .044   | .781   | -.001  |
| a The study coach gives me positive feedback                             | -.045  | .765   | .009   |
| c The study coach often gives me the feeling that I’m not doing well     | -.136  | -.663  | .131   |
| r The study coach doesn’t seem to like me much                           | -.103  | -.612  | .250   |
| a The study coach takes my learning needs into consideration            | .068   | .604   | -.104  |
| a In the teacher education course I cannot enough decide about my learning route | -.011  | -.077  | .610   |
| c In the teacher education course I often think: ‘I have learned a lot’ | -.033  | .105   | .606   |
| c In the teacher education course I cannot show that I am competent     | -.101  | .023   | .565   |
| c In the teacher education course I learn relevant new skills           | .007   | .096   | .506   |
| a In the teacher education course I am free to learn things that suit my interests | .061   | -.035  | -.492  |
| a In the teacher education course I often have to do what I’ve been told | -.023  | -.243  | .429   |
| a In the teacher education course I often feel pressured                 | -.244  | -.066  | .348   |
| c When we work together I feel less capable than my fellow students     | -.183  | -.134  | .211   |

| Component | Explained variance ($R^2$) |
|-----------|---------------------------|
| 1         | 14.71                     |
| 2         | 26.35 (11.64)             |
| 3         | 36.64 (10.29)             |

Note: BPNS: Basic Psychological Needs Scale (Deci and Ryan); r: relatedness; a: autonomy; c: competence.
The second factor consisted of five items with loadings ranging from .78 to .60. These items referred to a combination of the three theoretical constructs. In other words, this factor could not confirm any of the hypothesised theoretical constructs.

The third factor consisted of eight items, six with loadings above .40. Of these six items, three referred to the construct of competence and three to the construct of autonomy. This empirical factor could not confirm the theoretical competence factor.

Summarising, the results of the factor analysis did not confirm the expected theoretical structure with three factors. Therefore, a decision was made to carry out three separate factor analyses.

**Step 2. Separate factor analyses, one for each theoretical construct**

To determine whether each of the three separate theoretical constructs consisted of one latent dimension, a separate PCA was carried out for each factor (each separate PCA forced to one factor). The results are summarised below.

For the construct of relatedness, all five items had sufficient loadings. Together these items explained 30.95% of the variance. For the construct of autonomy, all items also had sufficient loadings and the explained variance was 32.25%. For the construct of competence, five of the six items had sufficient loadings, an explained variance of 29.47%. In other words, a latent dimension was found in the results of the relatedness, autonomy and competence items. However, when tested on reliability, Cronbach’s alphas amounted to .59, .47 and .46, respectively, not enough to make up scales. There were no possibilities to increase the alphas by removing items from the scales.

**Step 3: Exploring other items for valid scale construction**

Because the extended questionnaire consisted of 52 items it was possible to look for operationalisations that were more appropriate in the specific context of Dutch student teacher education. In order to construct valid scales, all possible relevant items for each construct (between 10 and 12 items each) were taken from the extended questionnaire and put into a PCA. Those items with a minimum of .40 loading were put into a reliability analysis to determine the homogeneity of the scale and items were removed, if necessary. The results are discussed below.

**Relatedness scale**

The extended questionnaire contained 10 items that referred to the construct of relatedness. Exploring these items in a PCA revealed a factor consisting of six items, two phrased positively and four negatively, with an explained variance of 37.51%. Four items (two positive, two negative) corresponding with Deci and Ryan’s operationalisation, and two new items together constituted a scale (Cronbach’s alpha = .63).

**Autonomy scale**

All 12 items that referred to the autonomy construct were explored in a PCA. This resulted in a factor consisting of nine items with loadings above .40 and an
explained variance of 24.86%. When a reliability analysis was carried out, four items remained (Cronbach’s alpha = .64). This scale consisted of two positively and two negatively phrased items (two items from the translation of the original BPNS and two new ones).

**Competence scale**

From all 10 items related to the construct of competence that were used in the PCA, six items constituted a factor with loadings above .40 and an explained variance of 26.34%. Four items were phrased positively, two negatively. Putting these six items into a reliability analysis, the four positively phrased items constituted a reliable scale (Cronbach’s alpha = .72). This scale consisted of two items that corresponded with the original BPNS and two new items.

The results, shown in Table 3, point out that three separate factors could be distinguished in an overall factor analysis, each of them referring to one of the theoretical constructs, and together they explained 47.11% of the variance.

The correlations between the 14 items (six relatedness, four autonomy and four competence items) are presented in Table 4. This table shows relatively high correlations between items from the same factor and relatively low correlations between items from different factors.

Table 5 shows that the correlations between the separate scales are significant but low. This indicates that although these three scales referred to a common construct (i.e. need-fulfilment in teacher education), each separate scale measured a specific aspect of this construct, namely the fulfilment of a specific basic psychological need (relatedness, competence and autonomy).

Finally, we determined whether these three factors comprised sufficiently reliable scales when used in a sample of other students ($n = 222$) from the same teacher education institutes, one year later. Table 6 shows similar alphas for both groups, in the second group ranging from .64 to .71. Each separate scale referred to one dimension and contained enough items to measure the construct. The constructs of relatedness, autonomy and competence were measured reliably in a student teacher population with this questionnaire.

**Conclusions and discussion**

The need for a reliable and easy-to-use instrument for measuring basic psychological need-fulfilment in student teachers required a search composed of three steps. The results of the factor analysis in Step 1 (see Table 2) provided insufficient evidence that the three dimensions, as postulated by Deci and Ryan, were measured reliably with the questionnaire for student teachers. As a result of this outcome Step 2 was necessary, namely an analysis of each separate dimension. The PCA per theoretical construct resulted in a structure with three different factors, but was not good enough to establish valid scales in the reliability analysis. In Step 3 for each latent dimension, an exploratory factor analysis (PCA) on a broader range of items was carried out. This exploratory factor analysis provided three factors consisting of six items for relatedness, four for autonomy and four for competence. Reliability analyses pointed out that each of these scales consisted of a sufficient number of items and sufficient internal consistency. These findings were confirmed by the results of a PCA on a new set of data a year later.
Table 3. Factor analysis on the new scales of relatedness, autonomy and competence (principal component analysis, varimax, n = 271).

| Component                                                                 | 1     | 2     | 3     |
|--------------------------------------------------------------------------|-------|-------|-------|
| r When we work together I do most of the things on my own                 | .628  | .224  | −.025 |
| r When we work together fellow students would rather not work with me     | −.616 | −.035 | .063  |
| r In the teacher education course I get along with my fellow student teachers | .600  | .051  | .071  |
| r When we work together my fellow students take me seriously              | .599  | .037  | .079  |
| r In the teacher education course I am very much on my own                | −.582 | .114  | −.173 |
| r In the teacher education course I have too few social contacts          | −.542 | .080  | .131  |
| c In the teacher education course I learn relevant new skills.            | .052  | .789  | −.013 |
| c In the teacher education course I often think: ‘I have learned a lot’  | −.028 | .754  | .136  |
| c When we work together I learn interesting new things                    | .204  | .715  | .072  |
| c When working together I often think ‘I have learned a lot’             | .255  | .607  | .352  |
| a In the teachers education course I feel free to create a study path that suits me | .013  | .091  | .782  |
| a In the teacher education course I can learn things that fit my interests| −.099 | .067  | .707  |
| a When we work together I cannot decide enough about the things I want to learn | −.031 | −.202 | −.653 |
| a When we work together I do not get a chance to determine what I want to learn | −.236 | .005  | −.589 |

Component Explained variance ($R^2$)

| 1 | Relatedness | 16.44 |
| 2 | Competence  | 31.15 (15.71) |
| 3 | Autonomy    | 47.11 (14.96) |

Note: r: relatedness; a: autonomy; c: competence.
Table 4. Correlations between the 14 items on the three scales ($n = 271$).

| Item                                                                 | Competence | Autonomy | Relatedness |
|---------------------------------------------------------------------|------------|----------|------------|
|                                                                     | 1 2 3 4 5 6 7 8 9 10 11 12 13 |
| 1. In the teacher education course I often think: ‘I have learned a lot’ |            |          |            |
| 2. In the teacher education course I learn relevant new skills       | .48        |          |            |
| 3. When we work together I learn interesting new things               | .29 .42    |          |            |
| 4. When working together I often think ‘I have learned a lot’         | .45 .26 .53 |          |            |
| 5. In the teacher education course I cannot decide enough about my learning route | -.16 -.19 -.19 -.24 |          |            |
| 6. In the teacher education course I feel free to create a study path that suits me | .16 .14 ns .25 -.46 |          |            |
| 7. In teacher education course I can learn things that fit my interests | .21 ns ns .22 -.29 .44 |          |            |
| 8. When we work together I do not get a chance to determine what I want to learn | ns ns ns -.31 .27 -.28 .22 |          |            |
| 9. When we work together my fellow students take me seriously         | ns ns .14 .30 ns ns ns -.16 |          |            |
| 10. In the teacher education course I get along with my fellow student teachers | ns ns .14 .18 ns ns ns .26 |          |            |
| 11. In the teacher education course I have too few social contacts   | ns ns -.14 -.16 ns ns ns -.18 -.32 |          |            |
| 12. When we work together fellow students would rather not work with me | ns ns ns ns .17 ns ns .16 -.43 -.15 .25 |          |            |
| 13. When we work together I do most of the things on my own          | -.16 -.17 -.23 -.22 ns ns ns .13 -.19 -.26 .27 .27 |          |            |
| 14. In the teacher education course I am very much on my own         | ns -.14 ns ns ns ns ns -.20 -.27 .21 ns .35 |          |            |

Note: ns: not significant.
An important question that needs to be answered concerns the validity of the three scales that have been constructed: do they measure the three psychological needs as postulated by Deci and Ryan? A comparison between the relatedness items from the original version of the BPNS and the Dutch scale for relatedness indicates that all items with relatively strong affective loadings (items in which words such as ‘care’, ‘friends’ and ‘like’ are used) were eliminated in the Dutch scale. Items with relative neutral loadings (items in which formulations are used such as ‘having lots of social contacts’ and ‘getting along’) could be maintained. This finding can be explained by the fact that in the Netherlands, as opposed to the USA, using relatively strong affective words is usually limited to an intimate circle of friends, partners and family. In the Netherlands, it is not common to use them with regard to relations at work or in school. So the Dutch scale for relatedness measures a more academic and functional concept of relatedness than the original version.

In the Dutch scale for competence all negatively phrased items from the BPNS were eliminated. Most of the positively phrased items could be maintained. That means that the concepts that are measured by both scales are quite similar. However, there is one exception: the item ‘People tell me I am good at what I do’ had to be removed from the Dutch version. Cultural differences can explain this: giving other people compliments is not self-evident in the Calvinistic culture that is typical of the Netherlands.

Finally, in the Dutch scale for autonomy, original items that refer to ‘freedom of expression’, ‘taking other people’s feelings seriously’ and ‘being myself’ were removed. Only items that refer to ‘freedom to decide for myself’ could be maintained. So the concept of autonomy that is measured by the Dutch version only partly corresponds with the concept that is measured by the original version, probably because autonomy in an educational context (with given rules and demands) has another meaning than autonomy in life in general, where being yourself as a concept is more relevant. These findings indicate that it is important to investigate further the meaning of the three theoretical constructs in different contexts.

Although the results of this study give support to Deci and Ryan’s model of three basic psychological needs, it is important to keep in mind that the data were

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### Table 5. Correlations between the three scales: relatedness, autonomy and competence (n = 271).

| Scale       | Relatedness | Autonomy |
|-------------|-------------|----------|
| Autonomy    | .17**       |          |
| Competence  | .26**       | .30**    |

Note: **Correlation is significant at the 0.01 level (two-tailed).

### Table 6. Internal consistency of the scales: reliability analysis with Cronbach’s alpha.

| Scale       | Relatedness | Autonomy | Competence |
|-------------|-------------|----------|------------|
| Items       | α           | Items    | α          |
| Items       | α           | Items    | α          |
| Items       | α           | Items    | α          |

2008 (n = 271) 6 .628 4 .724 4 .754
2009 (n = 222) 5 .641 4 .705 4 .726

M. Vermeulen et al.
gathered in a selective sample of teacher education institutes. Further research in broader and more representative samples needs to be carried out to confirm the findings reported in this paper. Furthermore, construction of the questionnaire built on previous knowledge on intrinsic motivation on learning and development in relation to basic psychological needs. Further research should be carried out to establish this relationship for other specific populations of student teachers. Finally, organisational and individual conditions were not taken into account and these could influence basic psychological need-fulfilment. More research on these relations would reveal insights that would be helpful in enhancing student teachers’ intrinsic motivation.

The study reported here has some interesting practical implications. Using the scales in combination with more qualitative methods (e.g. semi-structured interviews) could be helpful in measuring student teachers’ perceptions of basic psychological need-fulfilment in teacher education courses. On the basis of the data collected by this instrument, study coaches and student teachers could have informed discussions that would enlarge their understanding of the student teachers’ perceived need-fulfilment and intrinsic motivation in the context of their teacher education course. Based on the outcomes of these discussions, student teachers and study coaches would be able jointly to set classroom goals that accommodate the student teachers’ basic needs and enhance their learning (see Parker and Hess 2001 for a useful typology of classroom discussion within the context of teacher education). By using the data in this way, student teachers, facilitated by their study coaches, could be challenged to carry out a shared inquiry into their own motivational and learning processes. Study coaches would then play an important role in framing the actions the student teachers have decided on as serving the fulfilment of their basic psychological needs. As would be expected, this intrinsic goal framing would promote deeper processing of the learning material and greater conceptual understanding (Vansteenkiste, Lens, and Deci 2006, 28).

Besides the relevance for the student teachers themselves, this approach can prepare them for teaching practice in a very meaningful way. The student teachers will not only experience the relevance of a shared classroom inquiry into their own basic psychological needs themselves, but also be offered opportunities to acquire relevant theoretical concepts that can deepen their understanding of learning and motivational processes in their own (future) students, and enlarge the competencies that enable them to have stimulating student-teacher conversations with their (future) classes.

Finally, thanks to its practicality (quantitative data, 14 five-point items), the questionnaire can easily be implemented in teacher education institutes to support quality management, which is, as stated above, common practice in the Netherlands. On the basis of repeated measurements, trends can be revealed and comparisons can be made between departments and classes, serving as a basis for classroom dialogue as well as providing informed ground for goal setting and generating actions that stimulate intrinsic motivation for learning in day-to-day practice at the institution level.

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