What need-supportive and need-thwarting teaching behaviors do university teachers use in their honors classes? An observational study

Tineke Kingma a,b,*, Anneke Smits b, Debbie Jaarsma a,1, Joke Voogt c

a Department Wenckebach Institute, University Medical Centre Groningen, Hanzeplein 1, GZ, Groningen 9713, the Netherlands
b Department of Movement and Education, Windesheim University of Applied Sciences, Campus 2-4, CA, Zwolle 8017, the Netherlands
c Department of Child Development and Education, University of Amsterdam, Nieuwe Achtergracht 127, WS, Amsterdam 1018, the Netherlands

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ABSTRACT

Teacher classroom behavior is an important factor in student learning and motivation. Past research within higher education has primarily concentrated on identifying teaching behaviors that teachers and students deem important in honors classrooms. Yet, what specific teaching behaviors either support or thwart the needs of students in real-world honors classrooms is currently not clear. This study, which utilizes video observation, sheds light on teaching behaviors that either support or thwart students’ needs, as viewed through the lens of self-determination theory, within the context of Dutch honors education. We developed an observation tool to analyze video recordings of 12 lessons from four different teachers, and identified the types of behaviors making up the various dimensions of need-supportive and need-thwarting behaviors. We found nine types of behaviors that had not previously been identified in observational studies. Structure-providing behaviors were the most common need-supportive behavior, while need-thwarting behaviors always occurred alongside need-supportive behaviors. The observation tool introduced here can be used for further study of teaching behaviors in honors education practice. These results also make an important contribution to teachers’ further professionalization and instructional practices.

1. Introduction

Teaching behavior in the classroom is critical for student learning (Schneider & Preckel, 2017). Teaching behavior involves instruction, connecting with students, and responding to their interests and needs (Muijs & Reynolds, 2017; OECD, 2020). Teachers can motivate or demotivate their students during the learning process through their teaching behavior. Although we know a great deal about the effectiveness of particular forms of instruction, such as giving lectures, small-group discussions, brainstorming, or asking questions (Brewer & Burgess, 2005), much less information is available about actual teaching behavior in higher education practice. Previous empirical studies looking at teaching behavior, primarily conducted in secondary schools (Aelterman et al., 2019; Hornstra et al., 2021; Stroet et al., 2013) and to a limited extent in higher education (Gucciardi et al., 2020; Vermote et al., 2020), have usually emphasized self-report methods. Observational studies are a vital addition to these studies because of their high ecological validity (Haerens et al., 2013; Van Doren et al., 2023). They provide the opportunity to capture information about real-life examples of behaviors in different combinations and stages in actual classroom situations, rather than perceived information (Haerens et al., 2013; Van Doren et al., 2023). In addition, these concrete observations of teacher behaviors can help train honors teachers in higher education for their role (Gaudin & Chalies, 2015; Haerens et al., 2013; Lemke, 2007; Van Doren et al., 2023).

Through their teaching behavior, teachers support or hinder the satisfaction of their students’ basic psychological needs: autonomy, competence, and relatedness (e.g., Ryan & Deci, 2017). Autonomy is the feeling of control over one’s own actions, experiences, thoughts, and behavior (e.g., Deci & Ryan, 2000; Haerens et al., 2013; Ryan & Deci, 2017). Competence is defined as feeling confident about one’s abilities to achieve the desired goals (e.g., Haerens et al., 2013; Ryan & Deci, 2017), and relatedness is experiencing a sense of belonging and respect (e.g., Deci & Ryan, 2000; Haerens et al., 2013; Ryan & Deci, 2017). Meeting these basic needs is a necessary condition for intrinsic motivation (Deci & Ryan, 2000), which contributes to deep learning, continuing growth,
well-being, and better performance (Deci & Ryan, 2000; Orsini et al., 2015). Teacher behavior plays an important role in the satisfaction of the students’ basic needs in education.

Previous research has shown that teachers simultaneously exhibit various need-supportive and need-thwarting teaching behaviors in their lessons (Aelterman et al., 2019; Van den Bergh et al., 2013). The blend of teaching behaviors students encounter influences their motivation and performance (Deci & Ryan, 2000). To date, only a small number of observational studies on need-supportive and need-thwarting teaching behaviors have been conducted in secondary schools and secondary vocational institutions, and not in higher education (Cents-Boonstra et al., 2020; De Meyer et al., 2014; Haerens et al., 2013; Jang et al., 2010; Jiang et al., 2019; Reeve et al., 2004; Van den Bergh et al., 2013, 2016).

This study was conducted in a 4-year bachelor’s degree program at a Dutch institute of higher professional education (University of Applied Sciences). The program in question is an honors program that selects students based on a motivation letter and an intake interview. The program aims to create an educational environment where teachers nurture students’ intrinsic motivation through need-supportive teaching behaviors. This study aims to shed light on the need-supportive and need-thwarting teaching behaviors of teachers in honors education. Honors education is designed to educate students who are intrinsically motivated, inquisitive, have a profound desire for knowledge (Wolfensberger & Offringa, 2012), and are eager to tackle challenges (Scarger et al., 2014). Students appreciate teachers more who are demanding, challenging, and inspiring (Wolfensberger & Offringa, 2012). Empirical studies on teaching behaviors in honors education are scarce (Scarger et al., 2014; Wolfensberger, 2012). We are not aware of any observational studies in the classroom of honors education. Therefore, we developed an observation tool for analyzing videos of actual lessons in honors education. Our research question was as follows: What need-supportive and need-thwarting teaching behaviors do university teachers in honors education demonstrate during their classes?

2. Theoretical background

We used self-determination theory (SDT) to identify relevant teaching behaviors in honors education. When students experience more need-supportive teaching behavior from their teachers in class, their intrinsic motivation increases, and so does their engagement, self-regulation, learning, performance, well-being, and self-confidence (Deci & Ryan, 1985, 1987, 2000; Jang et al., 2010; Niemiec & Ryan, 2009; Reeve, 2009; Reeve & Jang, 2006; Ryan & Deci, 2017; Vansteenkiste et al., 2012). In contrast, as students experience more need-thwarting teaching behavior from their teachers in class, their intrinsic motivation decreases (Ryan & Deci, 2020), and their learning becomes more routine (Assor et al., 2005; Deci & Ryan, 1987, 2000; Niemiec & Ryan, 2009; Reeve & Tseng, 2011; Soenens et al., 2012; Van den Bergh et al., 2013). SDT proposes several types of motivation (Deci & Ryan, 1985, 2000) that can be placed along a continuum from high (intrinsic motivation, integrated and identified regulation) to low (introjected, external regulation, and amotivation). The level of motivation depends primarily on how students experience and evaluate the satisfaction of their needs for autonomy, competence, and relatedness (Deci & Ryan, 2000).

2.1. Dimensions of need-supportive teaching behavior

Teachers who exhibit need-supportive teaching behaviors support their students’ intrinsic motivation (Skinner & Belmont, 1993). They appreciate the students’ perspective (Reeve, 2009; Ryan & Deci, 2020). They engage in autonomy support (supporting the need for autonomy), providing structure (supporting the need for competence), and teacher involvement (supporting the need for relatedness). Table 1 shows an overview of the basic needs and need-supportive teaching behaviors. In order to support autonomy, teachers try to understand, acknowledge and respond to their student’s individual interests, perspectives, preferences and initiatives (Niemiec & Ryan, 2009; Reeve, 2009; Ryan et al., 2023). For example, they do so by soliciting students’ input regarding their interests and lesson contents (Cents-Boonstra et al., 2020), by providing students with options in assignments, or providing tasks that align with their goals or interests (Assor et al., 2002; Patall et al., 2010), and by using inviting, non-controlling language (Jiang et al., 2019; Reeve, 2009) such as “You might consider ...”. However, when teachers give choices in irrelevant and uninteresting tasks (Assor et al., 2002) or by using verbs like ‘you must’ or ‘have to’ choose (Sarrazin et al., 2006), choices can also feel like pressure (Ryan et al., 2023), and become need-thwarting.

By providing structure before and during class, teachers support students in their need for competence (Haerens et al., 2013). For example, they do so by being clear about what they expect from their students (Sierens et al., 2009; Vansteenkiste et al., 2012). They also offer challenging tasks (Niemiec & Ryan, 2009; Reeve, 2009; Reeve et al., 2004) such as an open or complex assignment, give feedback (Mouratidis et al., 2008), and explain why particular knowledge is of use or relevant (Assor et al., 2002; Ingram, 2012; Reeve & Jang, 2006; Skinner & Belmont, 1993). When teachers help students in recognizing the long-term relevance of their learning students are likely to be more engaged in learning activities and, as a result, perform better in demonstrating their competence (Vansteenkiste et al., 2006). However, students become frustrated when they feel overchallenged by complex tasks or expectations that are too high (Scager et al., 2014). Thus, structure, not to be confused with control, provides helpful information support through clarity of goals and guidelines (Aelterman et al., 2019). With the help, guidance, and feedback students need, they can make progress and feel competent. Good structure scaffolds learning when students encounter challenges, combined with positive guidance and feedback to grow and help when obstacles are encountered (Ryan et al., 2023). It is a challenge for teachers to find the right balance between supporting autonomy and providing structure (Vansteenkiste et al., 2012) to meet the diverse needs, interests and abilities of students Scager et al. (2017).

<table>
<thead>
<tr>
<th>Basic needs</th>
<th>Need-supportive teaching behavior</th>
<th>Need-thwarting teaching behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autonomy</td>
<td>Autonomy support</td>
<td>Control</td>
</tr>
<tr>
<td>Competence</td>
<td>Providing structure</td>
<td>Creating chaos</td>
</tr>
<tr>
<td>Relatedness</td>
<td>Teacher involvement</td>
<td>Cold teaching</td>
</tr>
</tbody>
</table>

Table 1 Basic needs and dimensions of need-supportive and need-thwarting teaching behaviors.
2.2. Dimensions of need-thwarting teaching behavior

Teachers who demonstrate need-thwarting teaching behavior may hinder their students’ intrinsic motivation (Bartholomew et al., 2011; Van den Berghe et al., 2013). They are less responsive to students’ perspectives (Soenens et al., 2012) and more distant (Aelterman et al., 2019; Brekelmans et al., 2000). Teachers can thwart students’ basic needs by being controlling and pressuring students to behave, by creating a chaotic environment without information and guidance, and by having cold interactions with their students that lead to feelings of loneliness and alienation (Deci & Ryan, 2000; Haerens et al., 2013; Ryan et al., 2023; Van den Berghe et al., 2016). Table 1 provides an overview of need-thwarting teaching behaviors.

Through both direct and indirect control, teachers may thwart their students’ need for autonomy (Assor et al., 2005; De Meyer et al., 2014; Haerens et al., 2015; Reeve, 2009; Van den Berghe et al., 2013; Vansteenkiste et al., 2005). Controlling teachers take the lead and steer their students’ thoughts, feelings, and actions in a particular direction (Assor et al., 2002). For example, they may use commanding language (Assor et al., 2005) such as “You have to meet all the criteria.” They may push students towards a single correct answer (Sarrazin et al., 2006) or may not allow any criticism (Assor et al., 2002). Controlling teacher behavior may indirectly induce feelings of guilt, shame, or fear (Soenens et al., 2012) for example through a statement such as: “If you are not able to pass this simple test, you are not fit for this profession.”

Teachers who create a chaotic learning environment may thwart satisfaction of their students’ need for competence (Ryan & Deci, 2017). They do so through unclear lesson objectives and by giving too few rules or too little information about what they expect from their students (Reeve, 2009; Van den Berghe et al., 2013). They also adopt a laissez-faire approach (Aelterman et al., 2019).

Finally, by being unfriendly, impatient, and distant towards their students, teachers may hinder satisfaction of their students’ need for relatedness (Ryan & Deci, 2017; Van den Berghe et al., 2013). They do so, for example, by ignoring or excluding students (Skinner & Belmont, 1993).

2.3. Observable teaching behaviors

Studies of teaching behaviors from the perspective of self-determination theory have previously been carried out in primary and secondary schools, with a focus on student perceptions of teaching behavior (Stroot et al., 2013) and self-reports from both students and teachers (Aelterman et al., 2019; Hornstara et al., 2021). Self-reports have also been obtained from teachers in higher education (Vermote et al., 2020). Using a vignette-based self-report questionnaire, this study focused on how teachers perceived their motivating and demotivating teaching styles (i.e., autonomy support, structure, control, and chaos) and the possible antecedents of their style (i.e., motivation and mindset). They aimed to gain insight into how these teaching practices are interrelated and form a cyclical structure within higher education.

In earlier research, need-supportive and need-thwarting teaching behaviors were viewed as opposites (Jang et al., 2010). Later studies have shown that teachers combine both need-supportive and need-thwarting teaching behaviors in their lessons (Aelterman et al., 2019; Vermote et al., 2020). However, these studies of teaching behavior have provided little insight into concrete teaching behavior in class. Observational studies of teaching behavior have mainly been conducted in a laboratory setting (e.g., Deci et al., 1994; Reeve & Jang, 2006). Only a limited number of observational studies have been conducted in authentic teaching situations, often in secondary schools and secondary vocational institutions (Cents-Boonstra et al., 2020; De Meyer et al., 2014; Haerens et al., 2013; Jang et al., 2010; Jiang et al., 2019; Van den Berghe et al., 2013, 2016). In this study, we complement the existing experimental and self-report studies by conducting video observations in authentic honors education teaching settings.

3. Methods

3.1. Research design

We conducted an observational, descriptive study, with observations based on video recordings. Video recordings render teaching behaviors visible (Haerens et al., 2013; Hennink et al., 2010; Noordegraaf & Wester, 2018), have high ecological validity (Haerens et al., 2013), and enable further review of the data (Klette & Blickstad-Balas, 2018). It is possible to precisely describe teaching behavior in authentic educational practice through video observation (Haerens et al., 2013; Van Doren et al., 2023).

3.2. Context, sample, and procedure

The 25 teachers and 250 students of this honors program form a close-knit community. Each class has 3 h of lessons in the morning or afternoon, and students work independently or in groups for the rest of the day on lesson-related assignments. This structure ensures that focus on the day’s lesson topic is maintained.

Teachers were informed about the study’s purpose in a team meeting, after which the specific information was sent by email. Four teachers expressed their willingness to participate. In individual agreements, it was then decided which three lessons and which classes would be filmed. We opted for several lessons per teacher to obtain as varied a picture as possible of different teachers’ need-supportive and need-thwarting teaching behaviors. We also decided to record lessons in different classes and weeks to minimize random factors (e.g., the time of day or unexpected situations; Cents-Boonstra et al., 2020). These 12 lessons formed a convenience sample (Marshall, 1996). The first author informed students about the study during class, 1 week before the first recording. All participating teachers and students took part voluntarily and signed an informed consent form. Confidentiality was guaranteed for teachers and students.

The observed teachers had 6 to 25 years of higher education teaching experience and 2 to 10 years of honors teaching experience. They taught first or second-year students in the course units on Organizational Behavior, Project Management, Global Challenges, and Statistics, focusing on knowledge, understanding, and application. The sizes of the observed classes ranged from 16 to 20 students.

3.3. Data collection

Data were collected between October 2019 and January 2020. A video camera with robotic support (SWIVL) was set up at the back of the class and followed the teacher’s movements. This setup meant the teacher was always in the frame, while students were filmed mainly from behind. The teachers wore a transmitting microphone around their neck, including during the coaching discussions with smaller groups of students. The use of the SWIVL camera meant that no adjustments to the classroom setup were required. The study was approved by the ethics committee of the University of Amsterdam under the number 2019-CDE-11252.

3.4. Data analysis

3.4.1. Unit of analysis

Previous observational studies of teaching behaviors frequently opted for the time-sampling method, in which observations were made at 5-minute time intervals (Cents-Boonstra et al., 2020; Haerens et al., 2013; Van den Bergh et al., 2013) or during a single specific lesson phase, for example, the beginning of the lesson (Van den Berghe et al., 2016). The disadvantage of this approach is that the interactions between the teacher and students become fragmented.

To avoid fragmentation, we opted for instructional patterns as the meaningful unit of analysis in this study, as this gave us a better
4. Results

The results of the study are described in Sections 4.1 and 4.2. Section 4.1 discusses the frequency of occurrence of the different dimensions of need-supportive and need-thwarting behavior. Section 4.2 describes the types of autonomy support, structure providing, teacher involvement, control, and cold teaching behaviors observed in the video recordings.
Table 3
Observation schedule for types of need-supportive teaching behaviors.

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>Encourages diverse responses d, a, 4</td>
<td>Encourages students to provide diverse responses and makes suggestions that require them to engage in higher level thinking.</td>
</tr>
<tr>
<td>A2</td>
<td>Encourages asking questions d, a, 5</td>
<td>Encourages students to ask questions or seek clarification.</td>
</tr>
<tr>
<td>A3</td>
<td>Fosters interest in learning d, a, 6</td>
<td>Fosters interest, sense of challenge, and curiosity during engagement in activity.</td>
</tr>
<tr>
<td>A4</td>
<td>Expresses high expectations d, a, 7</td>
<td>Expresses trust to students that they can do it, expresses high expectations.</td>
</tr>
<tr>
<td>A5</td>
<td>Reflects on the meaning and value of the student’s approach to the next step in the student’s project while leaving the student’s options open d, a, 5</td>
<td>Reflects on the meaning and value of the student’s approach to the next step in the student’s project while leaving the student’s options open.</td>
</tr>
<tr>
<td>A6</td>
<td>Offers choices to the students d, a, 1</td>
<td>Creates meaningful choices and options for students to take the initiative during learning activities.</td>
</tr>
<tr>
<td>A7</td>
<td>Offers students the opportunity to bring in their own experiences d, a, 1</td>
<td>Offers students the opportunity to bring in their own experiences and/or problems, to practice independently, to experiment, to exercise, and to solve problems on their own, without interfering.</td>
</tr>
<tr>
<td>A8</td>
<td>Uses non-controlling language d, a, 6</td>
<td>Uses communications that minimize pressure and conveys a sense of choice and flexibility with the use of “can,” “could,” or “may.”</td>
</tr>
<tr>
<td>S1</td>
<td>Provides clear explanation</td>
<td>Provides an explanation, examples, explains the how to fulfill a task or what steps to take.</td>
</tr>
<tr>
<td>S2</td>
<td>Asks questions to check understanding</td>
<td>Asks coaching/learning-focused questions to provide a short answer in order to check if students know and/or understand what has been discussed and explained.</td>
</tr>
</tbody>
</table>

Table 3 (continued)

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>S3</td>
<td>Asks for attention i</td>
<td>Can I have your attention again?</td>
</tr>
<tr>
<td>S4</td>
<td>Offers help during exercises d, a, 4</td>
<td>Focuses on getting the students’ attention. Supports students in their tasks or exercises when working independently.</td>
</tr>
<tr>
<td>S5</td>
<td>Provides an explanation i</td>
<td>“So, if we wanted to look at this graphically, this would be the null hypothesis. The data distributions of the three groups are all around the same mean.”</td>
</tr>
<tr>
<td>S6</td>
<td>Provides clear expectations d, a, 1</td>
<td>“For each plot that you make, apply the appropriate options. So I want to be able to read it. It has to have a label, and it has to get a number, it has to be referenced in the text.”</td>
</tr>
<tr>
<td>S7</td>
<td>Provides feedback on where to go next i</td>
<td>“…in this example, you should add subtasks… Because now it breaks down into too many different activities that don’t have much to do with each other… So, in your case, the quickest way to have a correct Work Breakdown Structure is to have four levels: results, tasks, some of your tasks have subtasks, and then come to the activities. In your overview, sub-tasks and activities are somewhat mingled.”</td>
</tr>
<tr>
<td>S8</td>
<td>Provides own opinion to elaborate on concepts d, a, 1</td>
<td>“I’ll tell you something about it, so that you are aware of it because sometimes people still use it. However, if you ask me, you are better off not using it.”</td>
</tr>
<tr>
<td>S9</td>
<td>Provides a rationale d, a, 1</td>
<td>“And I think it is good to include the workshops because I feel that the guide and the closing event in itself with the current expectations is not a full semester of five credits in the project. So I think you need an additional line of action.”</td>
</tr>
<tr>
<td>S10</td>
<td>Offers positive feedback d, a, 1</td>
<td>“Okay, so that makes sense.”</td>
</tr>
<tr>
<td>S11</td>
<td>Shows a video i</td>
<td>&quot;What I would like to do is show you a short YouTube about what we call observation inference, or you could say interpretation.&quot;</td>
</tr>
</tbody>
</table>

Continued on next page
### Table 3 (continued)

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>S12</td>
<td>Uses students’ work as an illustration</td>
<td>&quot;Another group in another class has sort of changed their topic into awareness about food sustainability. And I asked them to reach out to you.&quot;</td>
</tr>
</tbody>
</table>

#### Types of teacher involvement

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Addresses students by their first name</td>
<td>&quot;Thory, you had a question?&quot;</td>
</tr>
<tr>
<td>12</td>
<td>Shows enthusiasm and eagerness</td>
<td>&quot;We’re just seeing noise and action, so that is okay.&quot;</td>
</tr>
<tr>
<td>13</td>
<td>Shows respectful listening behavior and is responsive to student input/criticism/questions</td>
<td>&quot;No, so that is a good question.&quot;</td>
</tr>
<tr>
<td>14</td>
<td>Shares personal experiences</td>
<td>&quot;And this is a funny anecdote. I started to save energy last year with my daughter. And I became like my grandma: turn off the light, turn off the water, don’t shower every day. ... So we started a hard campaign. We saved a lot of energy. And I got a letter from the energy company. And they wanted to come to check if I had manipulated the energy use. So it is not like: well done... No, you woman.&quot;</td>
</tr>
<tr>
<td>15</td>
<td>Shows empathic behavior</td>
<td>&quot;My worry is a bit that you only have ... you have so many activities already right now in this semester.&quot;</td>
</tr>
<tr>
<td>16</td>
<td>Uses humor</td>
<td>&quot;I want to get rid of the exam altogether ... But not next week.&quot;</td>
</tr>
</tbody>
</table>

#### Note.

* d deductive code
* d, i inductive code
* a adjusted code. Numbers refer to empirical studies. Descriptions without a letter or a number were defined by the authors. 1 Haeren et al. (2013), 2 Van den Berghe et al. (2013), 3 Morgan (2006), 4 Aelterman et al. (2019), 5 Guacciardi et al. (2020), 6 Jiang et al. (2019), 7 Scager et al. (2014).

### Table 4

#### Observation schedule for types of need-thwarting teaching behaviors.

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>Uses controlling language</td>
<td>&quot;... You have to use the dataset ...&quot;</td>
</tr>
<tr>
<td>C2</td>
<td>Displays impatience</td>
<td>&quot;Other things you would like to share? Because otherwise, I would like to suggest that you have your break here, and then we’ll go to the last part.&quot;</td>
</tr>
<tr>
<td>C3</td>
<td>Does not accept criticism</td>
<td>&quot;Teacher says ‘It’s interactive.’&quot; [The student makes a critical remark. Teacher has no reaction and immediately turns to the screen.]</td>
</tr>
<tr>
<td>C4</td>
<td>Suppresses students using guilt</td>
<td>[Student asked a question. Teacher gestures: take a moment to think.]</td>
</tr>
<tr>
<td>C5</td>
<td>Stresses efforts needed to pass the exam</td>
<td>&quot;And I ask you this because I would like you to be able to mention them or explain them during the exam.&quot;</td>
</tr>
<tr>
<td>C6</td>
<td>Uses extrinsic motivation sources</td>
<td>[The student asks a question. Teacher doesn’t answer the question but makes a remark irrelevant to the question. &quot;... the pronunciation is not good.&quot;</td>
</tr>
</tbody>
</table>

#### Note.

* d deductive code
* i inductive code
* a adjusted code. Numbers refer to empirical studies. Descriptions without a letter or a number were defined by the authors. 1 Van den Berghe et al. (2013), 2 Aelterman et al. (2019), 3 Jiang et al. (2019)

### Table 5

#### Dimensions represented in teaching behaviors.

<table>
<thead>
<tr>
<th>Dimension of need-supportive and need-thwarting teaching behavior</th>
<th>Percentage of the total number of coded teaching behaviors (N = 1509)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autonomy support (n = 312)</td>
<td>21</td>
</tr>
<tr>
<td>Providing structure (n = 699)</td>
<td>46</td>
</tr>
<tr>
<td>Teacher involvement (n = 239)</td>
<td>22</td>
</tr>
<tr>
<td>Control (n = 103)</td>
<td>7</td>
</tr>
<tr>
<td>Cold teaching (n = 56)</td>
<td>4</td>
</tr>
</tbody>
</table>

need-supportive behaviors (autonomy support, providing structure, and teacher involvement) was in teacher-student interactive instructional pattern of dialogue with the class and in the student-centered pattern of group coaching. The comparatively most frequent use of the two dimensions of need-thwarting behaviors (control and cold teaching) was in instruction and explanation of theory (teacher-centered) and independent work (student-centered).
The teacher-centered pattern of instruction and explanation of theory \((n = 60)\) was the most often used instructional pattern, followed by dialogue with the class (teacher-student interactive; \(n = 40\)) and group coaching (student-centered; \(n = 33\)). Teachers demonstrated all the dimensions of need-supportive and need-thwarting teaching behaviors during all five instructional patterns, albeit in different ratios.

Structure-providing behaviors were the main behaviors exhibited during all instructional patterns. Teachers showed comparatively the most autonomy support during the student-centered group coaching pattern. Moreover, the teacher-student interactive patterns (dialogue with the class and student presentations) and the student-centered group coaching pattern showed comparatively the most teacher involvement. Concerning need-thwarting teaching behavior, teachers exhibited control mainly during the teacher-centered pattern of instruction and explanation of theory. They exhibited cold teaching mainly during the student-centered independent work pattern.

### 4.2. Types of need-supportive and need-thwarting teaching behaviors

The teachers displayed eight types of autonomy-supportive behaviors (see Fig. 2). A particular code could be assigned only once per instructional pattern. Autonomy support mainly aimed at promoting students’ input, because promote students’ input seems a more natural collocation. They did this by encouraging students to ask questions (during 40% of the 166 observed instructional patterns) and by encouraging diverse responses (36%). In addition, teachers provided autonomy support by fostering interest in learning (28%), for example, by pointing out articles for students to do further reading themselves or websites where they could follow current developments relating to the profession.

The teachers displayed 12 types of structure-providing behavior (see Fig. 3). A particular code could be assigned only once per instructional pattern. They did so mainly through two new, inductively generated codes: providing an explanation (in 92% of the instructional patterns) and asking questions to check understanding (72%). In addition, teachers offered structure through positive feedback (64%) in the form of “good” or “okay,” but without further explanation. These three structure-providing behaviors often occurred together. When the lesson topic related to applying and demonstrating professional skills, they relatively often exhibited other teaching behaviors. Among these were providing a rationale (43%) as to why the skill in question was crucial for developing one’s professional conduct or giving feedback on where to go next (a new code; 23%) or providing clear expectations (40%).

The teachers displayed six types of teacher involvement behaviors (see Fig. 4). A particular code could be assigned only once per instructional pattern. The video recordings showed that teachers displayed this behavior primarily through respectful listening (in 74% of the instructional patterns). The other types of teacher involvement behaviors were shown less often. For empathic behavior (40%), teachers asked the students how they were. Teacher involvement was also shown by addressing students by their first name (36%) and through the new, inductively
generated code-sharing personal experiences (26%). The teachers displayed six types of control behaviors and three types of cold teaching behaviors, albeit to a limited extent (see Fig. 5). A particular code could be assigned only once per instructional pattern. Cold teaching behavior was mainly demonstrated by not paying much attention to the students (in 28% of the instructional patterns). The
behavior in the video recordings showed that teachers did not always notice that a student had raised their hand, for example, because they were looking at the information on the board. Teachers mainly showed direct control behaviors by using extrinsic motivation sources (in 19% of instructional patterns), using controlling language (14%), and through stressing efforts needed to pass the exam (new code; 12%), and through impatience (11%). The new cold teaching behavior code offers irrelevant feedback (2%) was barely seen.

5. Conclusion and discussion

The research question for this study was as follows: What need-supportive and need-thwarting teaching behaviors do university teachers in honors education demonstrate during their classes? We gained insight into these behaviors by using the observation tool.

5.1. Need-supportive and need-thwarting teaching behaviors

The critical finding concerning the need-supportive teaching behaviors is that teachers were twice as likely to exhibit structure-providing behaviors as autonomy support and teacher involvement. Given the presence of a much larger arsenal of structure-providing behaviors compared to those seen in secondary and secondary vocational education, we can conclude that these honors education teachers differed in their focus on supporting their students’ need for competence. Teachers in honors education supported the need for autonomy and relatedness equally, in contrast to previous studies in secondary schools and secondary vocational institutions, where proportionally less autonomy support and more teacher involvement were shown (Cents-Boonstra et al., 2020; Van den Bergh et al., 2013). One explanation may be that the teachers in this study worked with a mix of instructional patterns that focused on students’ input and direction regarding their learning process. It is not known how need-supportive and need-thwarting teaching behavior are related to instructional patterns in secondary and secondary vocational education, as our study is the first to use instructional patterns as the unit of analysis.

As in previous studies (Van den Bergh et al., 2013), we saw in our study that the teachers were much more likely to show need-supportive teaching behavior than need-thwarting teaching behavior. Need-thwarting teaching behaviors occurred to a limited extent, and only in combination with one or more need-supportive behaviors. An explanation for the limited use of control approaches, in particular, could be found in the wide range of structure-providing behaviors that might render control unnecessary. Cold teaching by not paying much attention to the students was especially common in independent work, which seems logical, as students were working by themselves.

In this study, we identified some other teacher behaviors that were not found in previous observational studies in other types of education (secondary schools/secondary vocational schools). Based on the observations we made using the observation tool, we also noticed that the relationships between the different dimensions of honors education teaching behaviors differed from those in other types of education. The present study is, therefore, an addition to existing studies.

5.2. Constructing the observation tool

One outcome of this study was the development of a valuable tool to observe need-supportive and need-thwarting teaching behaviors in honors education. For such a tool to have content validity, it must be based on tools from previous observational studies, supplemented by findings from experimental, self-report, and lab studies (Patton, 2015). The tool’s reliability was supported by an intensive coder process in which codes were deleted, tightened, and supplemented for the honors education context. This resulted in tightening 26 existing codes and identifying nine new codes for teaching behaviors in honors education.

The supplementary and tightened codes for honors education mainly show broadening of the arsenal of structure-providing behaviors that teachers exhibit compared to previous observation tools. Two structure-providing behaviors not described in previous studies (in secondary schools and secondary vocational institutions) are noteworthy: providing an explanation and asking questions to check understanding. This may have been because some studies in secondary schools and secondary vocational institutions have continued to work with the existing validated list developed by Haerens et al. (2013) or Van den Bergh et al. (2013). The number of structure-providing codes was also limited in a secondary school study by Jiang et al. (2019), in which a new, validated observation schedule was developed. We made our observations in a completely different context, adding new structure-providing codes where necessary.

Another salient feature was the further breakdown of feedback that teachers in this study provided both positive feedback and feedback on where to go next (feed-forward). However, this feature was not reported in previous observational studies of teaching behaviors. Observational studies in secondary schools and secondary vocational institutions only distinguished positive feedback (praise) in the form of compliments and confirmations (Haerens et al., 2013; Jiang et al., 2019; Morgan, 2006; Van den Bergh et al., 2013), and constructive and non-constructive feedback as extremes on a bipolar scale (Jang et al., 2010). This might be caused by a change within higher education from a test culture to a feed-forward culture to prepare students for learning how to deal with the increasing complexity of the labor market (Sluijsmans & Segers, 2018). Feed-forward provides students with information about how they performed a task and how they can improve further (Hattie & Timperley, 2007), rather than whether or not the task has been accomplished.

The other new codes for structure-providing behavior involved different ways of explaining concepts. The video recordings were made with first- and second-year students at the end of semester 1, when they were still in their program’s initial phase. A cognitive basis is often laid in the early years of a program. Structure-providing behaviors support the need for competence. This might explain why teachers exhibited many (different) structure-providing behaviors in the observed lessons.

The teaching behaviors aimed at autonomy support and teacher involvement were also seen in observational studies in secondary schools (Haerens et al., 2013; Reeve et al., 2004; Van den Bergh et al., 2013, 2016) and secondary vocational institutions (Cents-Boonstra et al., 2020). The only newly generated code for teacher involvement was shares personal experiences in the lesson. On the other hand, previous self-report studies in secondary schools (Aelterman et al., 2019; Vansteenikste et al., 2012) and higher education (Vermote et al., 2020) often did not include teacher involvement.

A new control behavior, i.e., stresses efforts needed to pass the exam, was added to the need-thwarting behaviors. We did not find this code in secondary school and secondary vocational studies. This may have been because the recording occurred at the end of the semester. Previous studies have also identified teaching behaviors that contributed to chaos (Cents-Boonstra et al., 2020; Van den Bergh et al., 2013). However, we did not encounter this type of teaching behavior in the present study. Perhaps the broad arsenal of structure-providing behaviors prevented chaos from occurring.

5.3. Analytical lens

Previous observational studies frequently opted for the time-sampling method with observations at 5-minute time intervals (Cents-Boonstra et al., 2020; Haerens et al., 2013; Van den Bergh et al., 2013) or during a single specific lesson phase (e.g., the beginning of the lesson; Van den Bergh et al., 2016). These studies did not link their observations to specific types of instruction. Observational studies of whole lessons are also scarce (Lemke, 2007). In our study, we observed whole lessons and used instructional patterns as the unit of analysis within those lessons. This approach can avoid the fragmentation that
5.4. Strengths and limitations

A strength of this study is that it has produced an observation tool to shed light on need-supportive and need-thwarting teaching behaviors in honors education. A further strength is the choice to use instructional patterns as the unit of analysis. The tool we developed offers concrete elaborations of teacher behavior in honors education and can therefore be used as a point of reference in the professional development of honors education teachers regarding need-supportive and need-thwarting teaching behavior. This can be viewed as an extension of the emphasis on knowledge dissemination in training, and the potential for a more student-centered or learner-oriented approach to teaching.

The number of observations and their situation within a specific higher education context, i.e., honors education, is a limitation of this study. The four teachers who were observed each taught three lessons at the end of the first semester to relatively homogeneous groups of first- and second-year honors students at a single institute. The lessons were on subjects with a cognitive orientation, focusing on knowledge and application. Therefore, it is impossible to generalize the results to all higher education programs. However, the results do suggest directions for follow-up studies in other higher education contexts. Follow-up research with the observation scheme that was developed could be conducted with different groups of higher education students, during different semesters or academic years, and in lessons with different types of higher education learning objectives (such as forming judgments, communication, and learning to learn). This would allow broader conclusions to be drawn about the specific teaching behaviors of teachers in higher education and the typical relationships between the various need-supportive and need-thwarting dimensions. The observation tool and analysis based on instructional patterns could be used for this purpose, and, where necessary, expanded.

5.5. Concluding remarks

In this study, we presented qualitative research on need-supportive and need-thwarting teaching behaviors. Although there is a vast body of knowledge based on self-reports about teaching behavior in different teaching fields, observational studies in higher education based on video recordings are scarce. This study is an important addition to the self-report studies and the observation tool that we developed can help to train honors and higher education teachers for their role.

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CRediT authorship contribution statement

Tineke Kingma: Conceptualization, Formal analysis, Investigation, Methodology, Project administration, Validation, Writing – original draft, Writing – review & editing. Anneke Smits: Conceptualization, Formal analysis, Methodology, Validation, Writing – review & editing. Debbie Jaarsma: Conceptualization, Methodology, Supervision, Writing – review & editing. Joke Voogt: Conceptualization, Methodology, Supervision, Writing – review & editing.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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