

# Autonomy-supportive interventions in schools: A review

Petter Gustavsson  
Maria Jirwe  
Jon Aurell  
Emelie Miller  
Ann Rudman



**Karolinska  
Institutet**



## Contents

1	Foreword .....	3
2	Summary and conclusions.....	5
3	Background .....	7
3.1	An Autonomy-Supportive Intervention Program (ASIP) .....	9
3.2	The empirically validated motivational-supportive strategies .....	10
3.3	Aim of the present review .....	14
4	Method .....	15
4.1	Search strategy .....	15
4.2	Inclusion and exclusion criteria.....	15
4.3	Identification and selection of studies .....	15
5	Results .....	18
5.1	The empirical studies .....	18
5.1.1	Do ASIPs change teachers' motivational approaches in the classroom?.....	18
5.1.2	Do ASIPs for teachers increase students' academic motivation and task engagement?.....	18
5.2	Meta-analytic reviews .....	19
5.2.1	Autonomy support as a motivational approach: Is it teachable?.....	19
5.2.2	Do changes in teachers' motivational approaches elicit changes in students' motivation?.....	20
6	Discussion .....	33
7	References .....	40
8	Previous reports.....	46



# 1 Foreword

Theories about academic motivation and student engagement developed on the basis of experimental research in psychological laboratories have been used to create and test applications in real settings for the last 15 years. Carefully designed intervention studies, based on experimental designs, have been conducted in real life educational settings and have replicated and advanced previous knowledge of motivation and learning. The present report aims to examine current research literature for one of the main theories that constitutes the base for interventions often used to instill academic motivation and student engagement in schools: Self-Determination Theory (SDT). In particular, the focus of the present report is to describe studies that apply Autonomy-Supportive Intervention Programs (ASIPs) with the aim of influencing teachers' motivational approaches (or motivational styles, a term used by SDT researchers) in order to stimulate students' academic motivation and engagement (Reeve 2012, Reeve & Cheon 2014). The task is not to evaluate the interventions per se but instead to make an interpretation regarding how the research that guided the initial development of these interventions has been applied and evaluated in ecologically valid settings. This is done in order to explore the possibility of adapting, translating, and testing related approaches in a Swedish context. Here, the aim is to start building a firm evidence base and to learn from the implementation of motivational research in practice for its use in Swedish settings.

This paper is not a meta-analysis or a systematic review, but instead aims to present published studies that can be used as inspiration for future motivation studies in a Swedish context. The reason why this review was designed to survey social-psychological interventions in education was because this type of motivational supporting and reinforcing interventions are scarce outside the educational context. However, the problem with thwarted motivation and decreasing engagement is a general problem in many sectors. As researchers, teachers, managers, and clinicians, we are centrally concerned with motivation – how to move ourselves or others to act. Every day, clinicians, teachers, researchers, and managers struggle with how to motivate those that they mentor, and individuals (patients, students, professionals) struggle to find energy and mobilize effort and persistence for the tasks of life and work.

In prior research we have found that investigations on how to use the concept of motivation and to try to systematically let motivational strategies guide clinical research or clinical and educational practice lacking. Gustavsson and Rudman came across SDT when working with the longitudinal national studies LANE and PATH (Gustavsson et al. 2013, Rudman et al. 2010). The main findings in these studies showed that the motivation of Swedish nurses and teachers was an important determinant of stress, burnout, professional development, and wellbeing (Gustavsson et al. 2013, Hultell 2011, Hultell & Gustavsson 2011, Hultell et al. 2013, Jirwe & Rudman 2012, Rudman & Gustavsson 2012, Rudman et al. 2014). Gustavsson, Jirwe, and Rudman continued our work with the theory in another study on nursing students and in connection with this we translated and adapted instruments for assessing the various aspects of the theory which are now validated for use with, among others, students in higher education. Parallel to Jirwe and Rudman's work (Jirwe & Rudman 2012), Gustavsson and Aurell used this

theory when assessing psychological need satisfaction in national surveys (Aurell et al. 2015, Aurell et al. 2016). Thus, the benefit of using the Self-Determination Theory was recognized simultaneously in multiple areas of education and health care sciences at Karolinska Institutet, Stockholm, Sweden.

The planning of this paper as well as the literature search was designed by Ann Rudman (AR), Emelie Miller (EM), and Petter Gustavsson (PG), and later performed by EM in collaboration with KIB ([www.kib.ki.se](http://www.kib.ki.se)). EM and PG defined the first sample of papers included in this review. The final selection of included papers was made by Maria Jirwe (MJ) and PG. Chosen articles and the results from these were verified by Jon Aurell (JA) and MJ. PG, EM, MJ, and AR wrote the first drafts of different paragraphs of the paper. PG searched separately for relevant meta-analyses and wrote the first draft on sections reporting and discussing these papers. PG, in collaboration with all co-authors, finalized the report.

The results presented in this paper have been discussed at a seminar at Ekskåret Klustret ([www.klustretstockholm.se](http://www.klustretstockholm.se)) arranged by the Reinventing Learning Foundation (<http://www.reinventinglearning.org/>), who invited social entrepreneurs with special interest in the psychological wellbeing of youths in the educational setting in Sweden. A special thanks to Kim Törnqvist at Reinventing Learning Foundation for coordinating this work and the seminar. Thanks also to Erik Fernholm, Malin Rapp, and Erika Lundblad from the Reinventing Learning Foundation and GrowingMinds ([www.growingminds.se](http://www.growingminds.se)) for input. Thanks also to all people at Reinventing Learning and Ekskåret foundations (and friends of these initiatives) who attended the seminar and contributed to the discussion. Finally, the authors would like to thank Professor Johnmarshall Reeve for conducting an ASIP for us as university teachers, for generously sharing his latest thoughts on the subject, and for encouraging discussions on how to adapt ASIP for use in a Swedish context. Much of what is written in this report is the output from this collaboration and from reading the works by Professor Reeve and his coworkers.

This review would not have been possible without a grant from Axfoundation, Antonia Ax:son Johnson Foundation for Sustainable Development ([www.axfoundation.se](http://www.axfoundation.se)). We gratefully acknowledge their contribution to this work. Ann Rudman's participation in this study was made possible thanks to a grant from AFA Insurance. In addition, Karolinska Institutet funded the contributions made by Maria Jirwe and Petter Gustavsson.

## 2 Summary and conclusions

Motivational implications of interpersonal interactions have been one main focus for research from the Self-Determination Theory perspective (SDT). Within SDT, one branch has focused especially on classroom observations of how teachers' motivational strategies affect students' academic motivation. Here, motivational strategies have been conceptualized along a bipolar dimension from highly controlling strategies (instilling extrinsic motivation) at one end to highly autonomy-supportive strategies (instilling intrinsic motivation) at the other end. Correlational research has found that a teacher's use of autonomy-supportive strategies has positive influences on students' academic motivation, task engagement, and school performance. This review surveys sixteen empirical studies and two meta-analyses focusing on if an increased use of autonomy-supportive strategies can be trained and if an increased use of these strategies has downstream motivational consequences on students' academic motivation.

Autonomy-Supportive Intervention Programs (ASIPs) with the aim of helping teachers support the autonomy of their students have been developed. To enhance students' academic motivation and lessen their amotivation, these training programs have worked with teachers' interpersonal sentiment and behavior when trying to enhance their students' perceived locus of causality, volition, and perceived choice in educational tasks (i.e., students' subjective experience of autonomy). Programs have often provided training in up to six empirically validated autonomy-supportive instructional strategies: (1) rely on non-controlling, informational language, (2) provide explanatory rationales for requests, (3) take the students' perspective during instruction, (4) acknowledge and accept negative affect as okay, (5) display patience in order to allow time for self-paced learning to occur, and (6) identify, vitalize and support students' inner motivational resources.

Evaluations show that these strategies can be trained. Overall, in a meta-analytic review, the training programs were found to be effective (a large effect size of 1.16; Cohen's *d*). This corresponds to an odds ratio of 8.2, indicating that teachers trained to become more autonomy-supportive actually show a large increased use of autonomy-supportive instructional behavior (post-intervention as observed by independent raters) that is 8.2 times larger than teachers who did not take part in the training. Most importantly, research has also tested if teachers' increased use of autonomy-supportive strategies has downstream motivational consequences on students' academic engagement. In another meta-analytic review, results showed that the increased use of autonomy-supportive strategies among teachers yielded an average effect of 0.70 (Cohen's *d*) on students' academic motivation and performance (corresponding to an odds ratio of approximately 3.6). This result is even more impressive when it is taken into account that it is an indirect effect.

The studies presented in this report clearly show that ASIPs can help teachers to develop and enact autonomy-supportive strategies and that a more frequent use of these motivational strategies changes the classroom dynamics and produces broad student benefits. In the initial discussions or during the first workshop in an ASIP, participants often discuss their concerns

about the consequences of changing their motivational approach. One concern about autonomy support has to do with an assumption that being autonomy-supportive means to be permissive (in Swedish – “att curla barnen”), and that control/authority is a fundamentally important ingredient in parenting or teaching. From an SDT perspective, children’s behavior need not ultimately be controlled, targeted, or prescribed but alternatively may be guided, mentored, and supported. In general, however, teachers readily see the potential benefits of an autonomy-supportive approach for students and expect students to benefit from it. Before implementation, teachers may, however, fear an increased workload for themselves and that they will find the use of these strategies emotionally demanding. Recent research implies this may not be a problem since results show that a person who changes his or her motivational approach (e.g. teachers who increase their use of autonomy-supportive strategies) benefits as much from becoming less controlling and more autonomy-supportive as their students do from receiving it. Most studies reviewed here have been performed in different educational systems and this implies that results may be generalized to a Swedish educational context. But the relevance of these findings may also go beyond the educational field. Thus, receiving and giving autonomy-support may have the potential to influence quality in both important professional and private relationships and go well beyond the teacher-student collaboration for social sustainability.



### 3 Background

There is an ever-present dual function of what teachers and supervisors say and do during instruction (Reeve & Cheon 2014). For example, from the teacher's perspective learning activities are launched in order to make students progress in a subject and reach certain learning goals. However, for our students, the tone of our sentiment and behavior will be interpreted both as to what extent we are trying to impose control (vs. support self-directedness or autonomy) and to what extent our behavior informs them about their current competence (formative feedback vs. ability diagnosing). Students' interpretations will have downstream motivational implications influencing their engagement in the activity at hand (Reeve & Cheon 2014). In the present review, we are focusing on teacher-student interactions, but this dual function of what one says and does may also be true for other supervisor and supervisee interactions (including parent/child, health-professional/patient, coach/trainee, employer/employee, etc.) as well as partners' and collaborators' interactions when needs, strivings, and projects are negotiated. Thus, what we say and do and how we say and do it when we prescribe another person in a given situation affects the level of task involvement, the amount of effort and persistence invested, and even the enjoyment felt by the person trained or commanded.

The motivational implications of interpersonal interactions have been a main focus for research from the Self-Determination Theory perspective (SDT). In Self-Determination Theory, students' academic motivation to learn is viewed as a continuum from a complete lack of motivation, i.e., amotivation, to intrinsic motivation (Ryan & Deci 2000). Students who are intrinsically motivated find studying and learning inherently enjoyable or interesting; they engage in the activity for its own sake and find learning meaningful or relevant to themselves (Ryan & Deci 2000). Extrinsic motivation, on the other hand, means that you engage in an activity to obtain an outcome separable from the activity itself, for example a certain grade. One branch of research within SDT has focused on class-room observations of how a teacher's motivational approach affects students' academic motivation (Reeve & Su 2014, Su & Reeve 2011). Here, motivational approach has been conceptualized along a bipolar dimension from a highly controlling approach (instilling extrinsic motivation) at one end to a highly autonomy-supportive approach (instilling intrinsic motivation) at the other end. Thus, when trying to motivate their students, teachers can use motivating approaches ranging from highly controlling to highly autonomy-supportive. A controlling approach involves strategies, directives, and extrinsic motivators to foster students toward desired goals and behaviors. Thus, when using a controlling motivational approach the teacher motivates and engages the student by outlining and prescribing the appropriate behavior, telling students what to think, feel and do. When monitoring the process the teacher pushes the student to act according to the teacher's prescribed way and applies pressure to make the student comply. The teacher relies on pressuring or guilt-provoking language (must, should, ought to, have to, etc.), does not provide explanatory rationales, and refutes students' expressions of resistance, anger, or irritability. In contrast, autonomy-supportive strategies generally encourage students to pursue self-determined agendas and support students' intrinsic motivation. Thus, when using an autonomy-

supportive approach the teacher motivates and engages the student by taking the student's perspective and inviting the student to express preferences, expectancies, and worries. The focus here is to identify, vitalize, and support students' own motivational resources. This can, for instance, be done by displaying patience to allow time for self-paced engagement and learning to occur. From a theoretical perspective, an educational context relying on controlling principles will by-pass and even forego students' inner motivational resources (instead of vitalize and support these), resulting in frustration, low levels of engagement, resignation, and even dysfunctional behavior.

What do teachers say and do to support students' autonomy? An autonomy-supportive teacher takes their students' perspective when planning lessons and conducting teaching sessions. They also inform students sufficiently so they understand the rationale behind what they are doing and clarify how to reach a certain educational outcome. Moreover, recognizing and considering students' emotions is also part of an autonomy-supportive approach, including welcoming their thoughts, feelings, and suggestions into the teaching method. Important in all interactions in an ASIP is to support and vitalize students' inner motivation by using non-controlling, informative language and showing patience.

In research, ratings of the extent to which teachers use a controlling approach (i.e., prescribing behavior and pressuring for compliance) or an autonomy-supportive approach (i.e., taking the student's perspective; inviting input and energizing the student's own motivational resources) have been related to students' ratings of their academic motivation and their class-room engagement. A meta-analysis of 71 such empirical studies (from 1990 to 2011 (Stroet et al. 2013)) showed a clear positive association between lower levels of controlling motivational approaches and students' higher levels of academic motivation and task engagement (i.e., degree of student effort put down and involvement into learning activities). In a recent meta-analysis (Lochbaum & Jean-Noel 2016), the motivational implications of controlling vs. autonomy-supportive motivational approaches demonstrated by physical education teachers were summarized. In total, 39 correlation-based studies with a combined total of 23,554 participants were analyzed. Large effect sizes (correlations around 0.50 and above) were found for teachers' motivational approaches and students' academic motivation and wellbeing. Results showed that the less often teachers used a controlling motivational approach, the more often students were found to be motivated, as well as to report a higher prevalence of positive emotions and higher levels of wellbeing. A moderate effect size was found for the association between teachers' motivational approaches (less controlling) and students putting (more) effort into the learning activities (correlation approx. 0.30).

Narrative reviews suggest that the benefits of an autonomy-supportive motivational approach (in comparison to a controlling motivational approach) go beyond the influence of students' current academic motivation and engagement (Reeve 2009, Reeve & Cheon 2014, Reeve & Su 2014). For example, studies indicate that students taught by autonomy-supportive teachers experience and display enhanced learning (e.g. as measured by better conceptual understanding and deeper informational processing), better performance, as well as healthier development and greater wellbeing. In general, the beneficial associations, reflecting the importance of teacher

behavior for student engagement, have been found in studies in a variety of educational settings, including preschool, elementary school, middle school, and high school, as well as on undergraduate students, students with special needs, students in after-school programs, and in classrooms around the world (North America, Western and Eastern Europe, South America, the Middle East, and Eastern Asia).

Based on the results of these correlational studies and promising results on students' academic motivation and task engagement from experimental studies in educational psychology where instruction was varied to imply different degrees of control or autonomy support (Deci 1995), researchers began developing training intervention programs to help teachers support the autonomy of their students. Such programs have been developed and tested in USA, Israel, South Korea, Switzerland, and Canada (for descriptions of different programs and references see Assor 2016, Guay et al. 2016, Reeve 2016). Below, the content and structure of the most (rigorously) tested program developed by Johnmarshall Reeve and coworkers are summarized (Reeve 2011, Reeve 2016, Reeve & Cheon 2014).

### ***3.1 An Autonomy-Supportive Intervention Program (ASIP)***

The goal of an ASIP is to improve academic motivation among students by intervening, not with the students themselves but with their teachers. The layout of the ASIP is to help teachers learn how to develop and enact a motivational approach that vitalizes students' inner motivational resources. This is done by providing (and training) teachers with empirically validated instructional strategies (see "The empirically validated motivational-supportive strategies" below and Figure 1-4) that they can use when trying to enhance their students' perceived locus of causality, volition, and perceived choice in educational tasks (i.e., students subjective experience of autonomy).

The various ASIPs tested in previous research have consisted of three steps and have been carried out across a semester. The first part was often provided before the semester started and consisted of a three-hour workshop. The second part was a two-hour group discussion one month into the semester and the third part was also a two-hour group discussion held in the second half of the semester. Thus, the ASIP starts with a three-hour workshop where teachers are provided with two different teaching scenarios (essays); one describing an autonomy-supportive teaching approach and the other outlining a controlling teaching approach. Based on these teaching scenarios, the teachers assess how well each scenario describes what they themselves do in the classroom on a regular basis. After assessing their current teaching approach, the teachers learn about the Self-Determination Theory (SDT), its importance for students' academic motivation, and what autonomy-supportive and controlling teaching methods are. The teachers are provided with examples (films) of autonomy-supportive instructional strategies (described in a later paragraph and in Figure 1) and how to use it. After this workshop, the teachers return to their classrooms and during the following month they are encouraged to practice the autonomy-supportive strategies in working with their students and their materials.

During the second part, consisting of a two-hour group discussion, the teachers share their experiences of using autonomy-supportive strategies in the classroom. In these discussions they learn from each other and share new ideas on how to further develop and implement autonomy-supportive instructional strategies. In the final two-hour group discussion, the teachers once again discuss and reflect over their experiences of using an autonomy-supportive teaching approach.

For a more detailed description of the program, see Reeve & Cheon 2014. Examples of materials used in each ASIP are available in some publications, such as the teaching scenarios frequently used to assess self-described motivational strategies (Reeve et al. 2014), rationales for applying autonomy-supportive strategies (Reeve 2009), instructional behavior cards (Reeve 2011), and scoring sheets for classroom teacher behavior (Reeve et al. 2004).

### ***3.2 The empirically validated motivational-supportive strategies***

To enhance students' academic motivation and lessen their amotivation, intervention programs have worked with teachers' and parents' interpersonal sentiment and behavior when trying to enhance students' or children's perceived locus of causality, volition, and perceived choice in educational tasks (i.e., students subjective experience of autonomy). Taken together, programs have provided training in up to six empirically validated autonomy-supportive instructional strategies: (1) rely on non-controlling, informational language, (2) provide explanatory rationales for requests, (3) take the students' perspective during instruction, (4) acknowledge and accept negative affect as okay, (5) display patience in order to allow time for self-paced learning to occur, and (6) identify, vitalize, and support students' inner motivational resources.

The number and definition of the most important autonomy-supportive strategies varies somewhat over the different programs (Su & Reeve 2011). All strategies are not solely focused on supporting autonomy and in order to avoid conceptual confusions it may be more relevant to label these strategies as motivational-supportive. We also find it useful to classify the strategies according to what extent they reflect fundamental orientations to teaching (or parenting, coaching, etc.), motivational tactics to use, and self-regulatory strategies. These three categories can be seen as the three layers of a broader motivational-supportive approach.

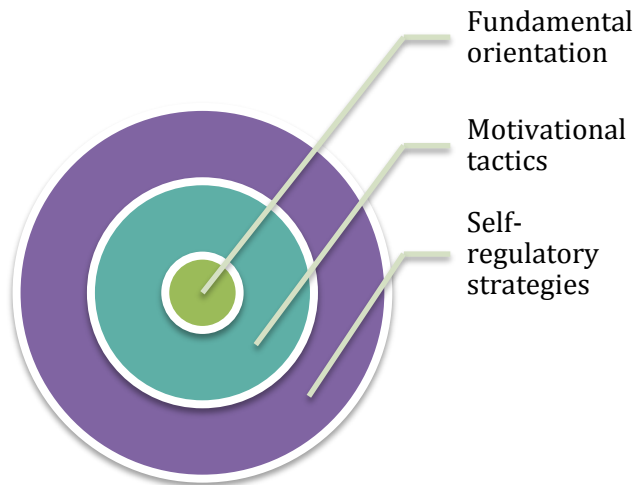


Figure 1. The three layers of a motivational-supportive approach.

By fundamental orientation or approach to teaching we mean strategies that permeate into all aspects of teaching; from the planning stages, through instruction and interactions, to evaluation. The fundamental orientation in motivational-supportive teaching is for teachers to be in sync with their students (Figure 2). First and foremost, this is about taking the students' perspective (when planning lectures and choosing materials, during instruction, classroom management, evaluation, etc.) and second to continually welcome and solicit students' thoughts, feelings, behaviors, and suggestions into the lesson plan and flow of instruction.

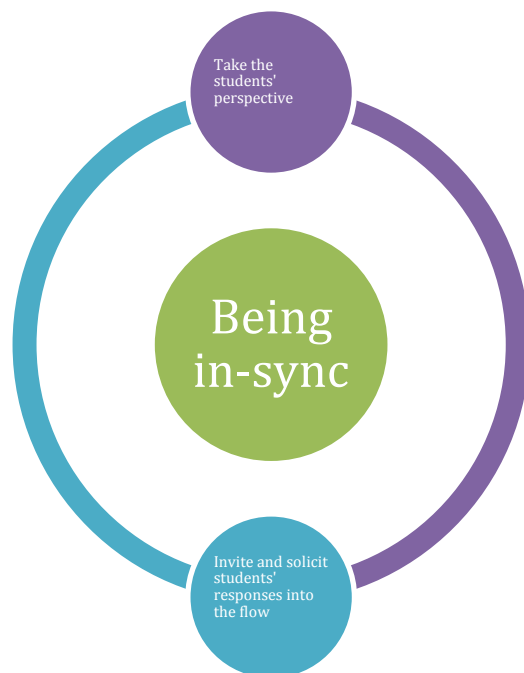


Figure 2. Two strategies for being in-sync with students (aspects of the fundamental orientation).

The motivational tactics comprise teaching strategies to vitalize and support students' lesson-relevant inner motivational resources. From an SDT perspective, these inner resources comprise the basic psychological needs (the three basic needs for autonomy, competence, and relatedness), learning-relevant moods (curiosity and interest), intrinsic goals, and self-endorsed values. Instructional strategies to vitalize the six inner motivational resources are listed in Figure 3.

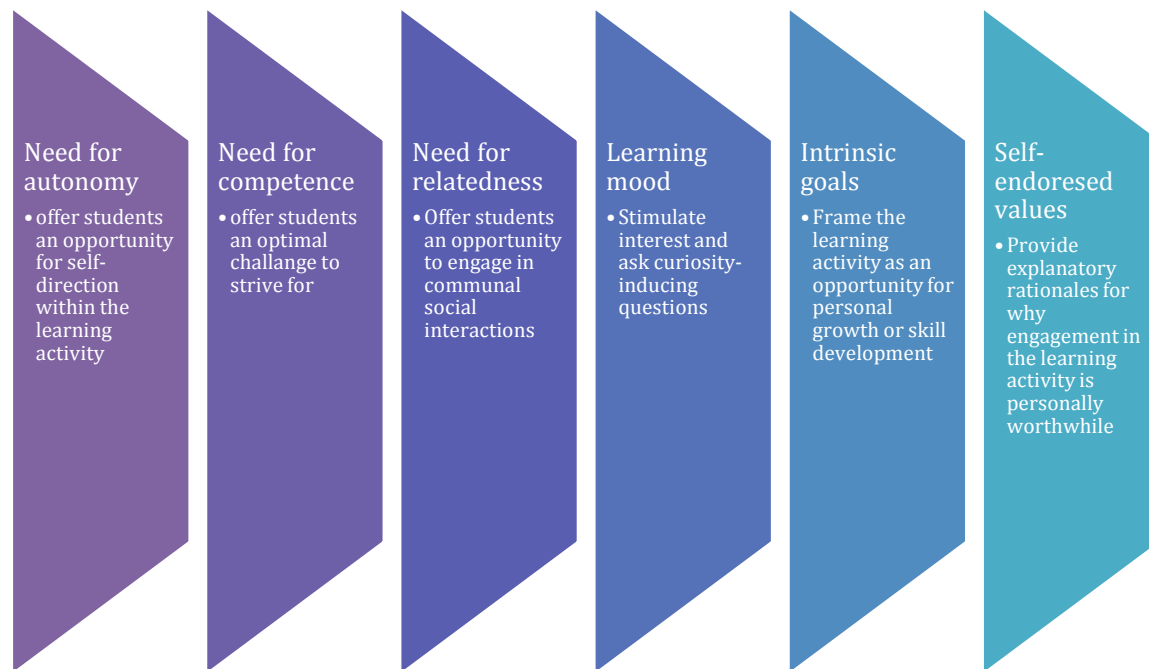


Figure 3. The motivational tactics: Strategies to identify, vitalize, and support inner motivational resources.

The last category or layer of the motivational-supportive approach comprises self-regulatory strategies (Figure 4). These comprise proactive strategies reflecting the reliance of non-controlling and informational language and providing illuminating rationales for learning activities. These strategies are, of course, also important to use “live” in case of being provoked, when responding to emotional outbursts and when disagreements and conflicts arise. Two additional strategies are especially important in such emotionally challenging situations. The first deals with strategies to acknowledge and accept students' expressions of negative affect. The second strategy is about displaying patience in order to allow time for self-paced learning to occur.

It is easy to see how the opposite of these strategies, that is, how the use of controlling language, avoidance of giving rationales, frustration over others' (negative) emotional expressions, and impatience when students struggle with their responses, thwart and diminish students'

motivation. Thus, it is important to regulate one's own immediate responses or reactions in challenging situations, and get hold of the "knee-jerk" reaction of wanting to impose control and head off resistance. Thus, self-regulating one's own reactions during interactions instead by promoting non-controlling language, rationales, patience, and acceptance are thought to enhance (instead of thwart or diminish) students' academic motivation. These four strategies are often thought to be the most important when trying to support (and not to frustrate) others' autonomy. Thus, in early ASIPs, these were the strategies that were focused on. This outer-layer has subsequently been accompanied by strategies that may have been seen as prerequisites (the fundamental orientation) and different strategies that pinpoint specific inner motivational resources (the motivational tactics). In general, most authors in the field have, regardless of the wider scope of most current ASIPs, continued to label all strategies included as autonomy-supportive. Some authors have recognized this problem and suggested the use of Need-Supportive strategies instead. In our opinion, this label is still too narrow to include all strategies and for now we will think of the strategies as part of a broader motivational-supportive approach. However, in the methods and results sections we will stick to the original vocabulary and write about all strategies in a program as autonomy-supportive strategies.



Figure 4. The self-regulation layer of a motivational-supportive approach.

### ***3.3 Aim of the present review***

Besides the intervention programs and evaluations from Reeve's lab, there are several other intervention programs available (Assor 2016, Guay et al. 2016, Reeve 2016) and studies have also been published where experimental evaluations have been performed on those. The number and availability of such studies thus calls for a review in order to learn from previous initiatives. Thus, the twofold purpose of this literature review is firstly to discuss the effectiveness of ASIPs in increasing autonomy-supportive behavior of teachers, and secondly to assess if changes in teachers' motivational approaches have any impact on students' academic motivation and task engagement.



## **4 Method**

We conducted the literature review in accordance with the guidelines in Gough et al. (2012) and the PRISMA statement (Moher et al. 2009).

### **4.1 Search strategy**

In addition to the empirical studies included from the meta-analysis of Lazowski & Hulleman, 2015, we conducted a separate literature search. A search strategy was developed, based on the study aim, and contained three components: 1) The autonomy support intervention theory 2) The methods of interest, and 3) The dependent variables of interest. In line with consultation with the search laboratory expert librarians at Karolinska University Library, we decided that the literature search should be done in the databases *Web of Science*, *Psychinfo*, and *Eric*. *Web of Science* provided us with a single destination where we could access a vast amount of multidisciplinary research, *Psychinfo* is a database for psychological research, and *Eric* is a database that covers educational research. The best key words to use were also discussed. The search strategy was modified for each database and below follows the actual search words used and the “block method” of the literature search. Truncation was used when we also wanted to cover plural endings of the chosen words.

### **4.2 Inclusion and exclusion criteria**

To be included in the review the studies needed to: (1) include an intervention aiming at improving teachers’ or parents’ autonomy-supportive behaviour, (2) be performed in an educational context, and (3) evaluate the effect of the intervention on teachers and/or students. For this literature review the study design of included studies was set to interventions. Here the interventions could be targeted at changing teachers’ or parents’ levels of perceived or actual autonomy-supportive approaches. No limits were set regarding the age of the participants or the sample size of the studies. The exclusion criteria were: (1) language (only articles written in English or the Scandinavian languages Swedish, Norwegian, or Danish were included), (2) correlation studies, (3) experimental studies conducted by a researcher without the involvement of teachers or parents.

### **4.3 Identification and selection of studies**

Of the 206 studies identified in the search, 16 have been included in the results tables (please see *Figure 4* and *Table 2* for more details on the review process and results). Many duplicates, where the same study existed in more than one of the databases, were excluded. The search was conducted as broadly as possible, in an attempt to ensure that no relevant studies were missed. However, this meant that a lot of irrelevant studies were detected, such as studies on autonomy support but without an intervention being conducted.

Table 1. Structure of the literature search.

---

*Block 1* (Intervention of interest)

1. ASIP (Autonomy-supportive interventions program)
2. Autonomy Support
3. 1 OR 2

*Block 2* (The methods of interest)

4. Intervention\*
5. Trial\*
6. Program\*
7. 4 OR 5 OR 6

*Block 3* (The dependent variables of interest and the subjects of interest)

8. “Academic performance”
9. “Academic achievement”
10. School\*
11. Student\*
12. Teacher\*
13. 8 OR 9 OR 10 OR 11 OR 12

*Block 4* (The combinations of the three blocks above)

14. 3 AND 7 AND 13
-

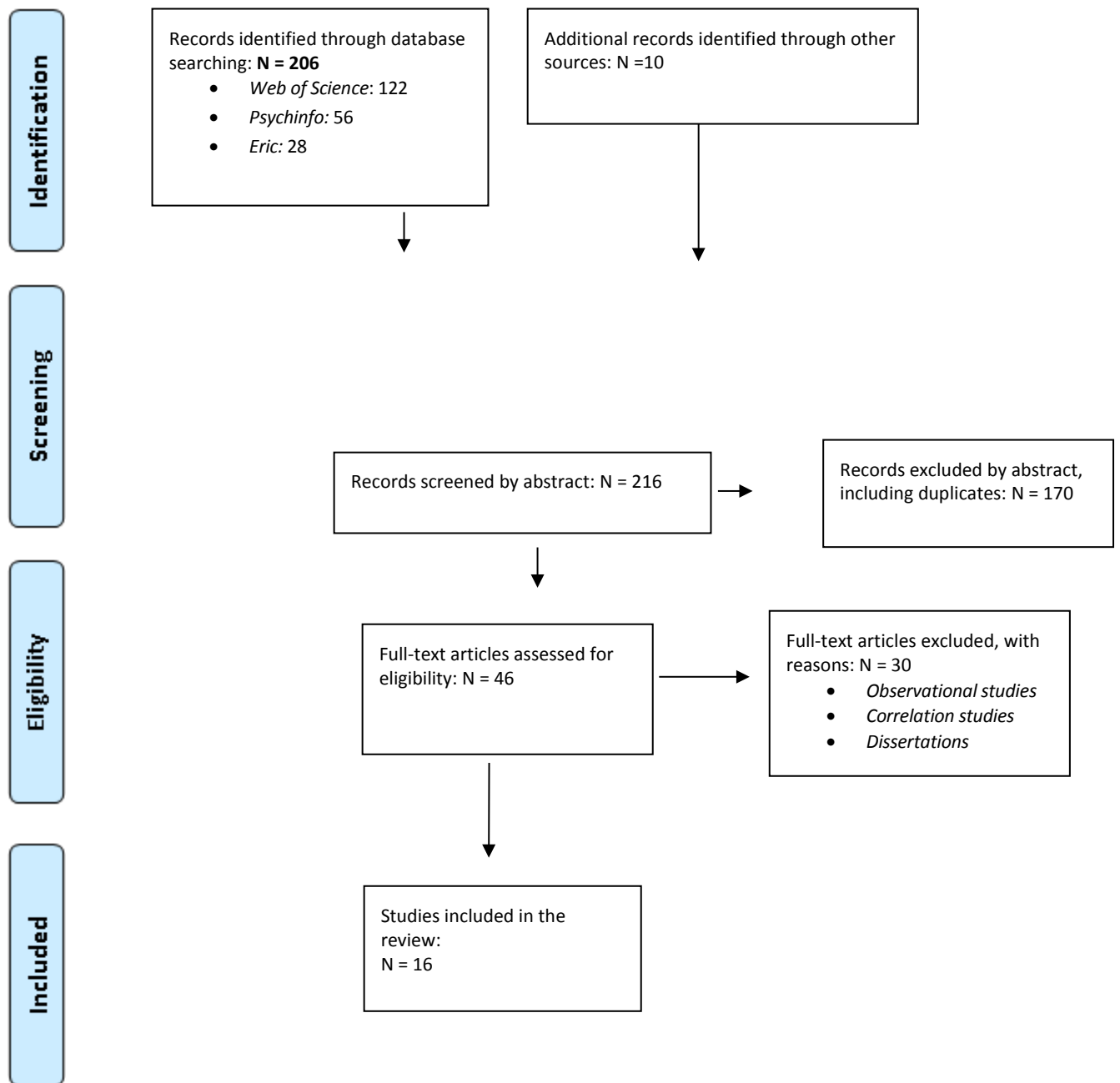


Figure 5. PRISMA flow diagram of the screening process of the literature.

## **5 Results**

In total, 16 papers (listed in Table 2) were included from the literature search and two reviews were summarized and reported on. The identification and selection of studies are shown in Figure 5. Of the 206 articles found, 190 were excluded because they were either duplicates, irrelevant to the research question, or observational or correlational studies.

### **5.1 The empirical studies**

The results from the empirical studies (16 studies, listed in Table 2), found in our literature search, were generally positive concerning the effect of autonomy support intervention programs (ASIPs) on teachers' motivational approaches. Of the 16 included studies, five evaluated the direct effects of ASIPs on teacher outcomes and the indirect effects on student outcomes. The other studies focused on either outcomes of teachers (five studies) or students (six studies). The majority of the studies (ten out of 16) focused on physical education (PE), while the other six were conducted in theoretical educational contexts. The studies' timelines of follow-up ranged from in direct proximity to the intervention to up to one year post intervention. Five studies were conducted in the USA, five in South Korea, and two in Spain. One study was conducted in each of the following countries: France, Singapore, UK, and Canada. The studies were published between the years of 1998 and 2016. The studies included interventions with teachers working with students of different ages, ranging from 10-year-old students to university students. In short, the ASIPs had a positive effect on teachers' autonomy-supportive approaches in the classroom, on their teaching skills, and on their own wellbeing. In regard to students, the ASIPs' effects on teachers' motivational approaches had positive effects on students' motivation, engagement, and perceived competence.

#### **5.1.1 Do ASIPs change teachers' motivational approaches in the classroom?**

In regard to teachers, ten studies (seven in the context of physical education) evaluated whether teachers had become more autonomy-supportive after the intervention (i.e. if they applied the 5-6 autonomy-supportive strategies during instruction and feedback more often). All of the ten studies showed that an ASIP increased teachers' use of autonomy-supportive motivational strategies in the classroom (Chatzisarantis & Hagger 2009, Cheon & Reeve 2013, Cheon et al. 2015, Cheon et al. 2012, Cheon et al. 2014, Perlman 2015, Reeve 1998, Reeve & Cheon 2016, Reeve et al. 2004, Tessier et al. 2008). In two of the studies, teachers also reported that the ASIP improved their teaching skills (Cheon & Reeve 2015, Cheon et al. 2014). Giving autonomy-support also enhanced teachers' sense of importance, usefulness and satisfaction (Cheon & Reeve 2015), and wellbeing (Cheon et al. 2014).

#### **5.1.2 Do ASIPs for teachers increase students' academic motivation and task engagement?**

Ten studies (six in the context of PE) evaluated whether students had an increased academic motivation and student engagement after the intervention. In nine of the ten studies, the ASIP had a positive effect on students, increasing their academic motivation (Amado et al. 2014, Cheon & Reeve 2015, Cheon et al. 2012, Froiland 2011, Guay et al. 2015, Meng et al. 2016,

Moreno-Murcia & Sanchez-Latorre 2016, Patall et al. 2010). In one study (Perlman 2015) no effect was found on the students' own motivation but they perceived a higher level of autonomy-support from their teachers. In three studies, the ASIPs also had a positive effect on student engagement (Cheon & Reeve 2015, Cheon et al. 2012, Meng et al. 2016), and in two studies, the ASIPs increased perceived competence among the students (Patall et al. 2010).

Two of the studies focused on motivation in relation to homework (Froiland 2011, Patall et al. 2010). In Froiland (Froiland 2011), the ASIP focused on the parents; teaching them autonomy-supportive communication techniques and how to help their children set learning goals in relation to their homework. The students reported an increased positive effect towards homework and the parents reported that their children had become more autonomously motivated. In the study conducted by Patall et al. (Patall et al. 2010), the ASIP focused on providing choices in relation to homework and by doing so supporting students' motivation. The ASIP increased students' motivation with regard to schoolwork, increased the completion rate of schoolwork, and improved test results related to the homework.

## **5.2 *Meta-analytic reviews***

In addition to the empirical studies identified in the literature search, two meta-analytic reviews relevant to the research question were also found. The first review summarized research on whether training programs aimed at helping people to become more autonomy-supportive towards others were effective (Su & Reeve 2011). Thus, questions were: is an autonomy-supportive motivational approach teachable, and do interventions show observable changes in type and frequency of autonomy-supportive strategies used? The second review summarized the effects of motivation interventions in educational settings (Lazowski & Hulleman 2016). In particular, this second review tried to answer the question whether autonomy-supportive intervention programs with the aim of influencing teachers' motivational approaches also affect academic motivation and student engagement (in addition to producing changes in teachers' motivational approaches). The results from each of the two meta-analytic reviews are described below.

### **5.2.1 *Autonomy support as a motivational approach: Is it teachable?***

The first meta-analysis provided a summary of 19 of the 23 evaluated papers (resulting in 20 effect sizes based on 916 subjects), based on studies estimating the effectiveness of autonomy-supportive intervention programs (ASIPs) targeting one person's motivational approach toward another person (Su & Reeve 2011). Studies were based on samples of teachers (pre-service, preschool, elementary, high school, and college teachers as well as physical education teachers), parents, and health professionals. Based on previous research showing that the motivational approaches of teachers, coaches, parents, counselors, managers, and health professionals (i.e., supervisors) influences their supervisees' (i.e., students, children, clients, employees, etc.) motivation and engagement, the present review aimed at summarizing the effectiveness of training programs helping people to become more autonomy-supportive toward others. Overall, the training programs were found to be effective (a moderately large effect size

of 0.63; Cohen's *d*). This corresponds to an odds ratio of 3.3, indicating that people who were trained to become more autonomy-supportive towards others actually show such behavior (post-intervention as observed by independent raters) 3.3 times more often than people who did not take part of the training. Looking only at studies including teachers, the effectiveness was larger (Cohen's *d* = 1.16; corresponding to an odds ratio of 8.2). The different ASIPs tested were not shown to be equally effective and differed to the extent that they trained multiple strategies of autonomy support. Most studies included training in at least four core strategies of autonomy support. The majority of studies included exercises on providing rationales, acknowledging others' feelings and taking others' perspectives, as well as on providing choices, and nurturing inner motivational resources. Some studies also included exercises on how to use non-controlling language, provide non-conditional positive regard (i.e., not "showing the cold shoulder"), and how to display patience in order to permit time for self-paced learning to occur. When analyzing the relative effectiveness of these strategies, in particular interventions emphasizing training in how not to use controlling language (but including the other strategies as well) were found to be the most effective, while the effect size for training in offering choices showed the lowest magnitude. Moreover, interventions relying on multiple sources of learning materials and media also showed greater effects, as did skill-based training in comparison to content-based training interventions. Thus, this meta-analysis shows that training programs aiming at changing teachers' instructional approaches to become more supportive of students' autonomy show large effects on behavior changes among teachers (Su & Reeve 2011).

### **5.2.2 Do changes in teachers' motivational approaches elicit changes in students' motivation?**

The second meta-analysis provided a summary of intervention studies in educational contexts that were grounded in different motivation theories (Lazowski & Hulleman 2016). Of 158 evaluated papers (extracted from 1471 search results), 74 papers defined the data for analysis, including 92 effects based on 38,377 participants. Data comprised experimental or quasi-experimental studies (64 vs. 28 studies, respectively) performed in settings ranging from kindergarten up to post-secondary school. Interventions were based on different theoretical frameworks (including interventions based on the SDT framework). The ecological validity was high for most studies (i.e., a high degree of naturalness) as interventions were performed in everyday school settings using dependent variables (mostly students' achievement) that normally occurred within that setting. The results indicated that the motivation interventions were generally effective. The pooled effect size was 0.49 (Cohen's *d*) corresponding to an odds ratio of approximately 2.2 (odds ratios transformed and calculated from paper). Thus, children participating in a motivation intervention were found to be 2.2 times better off in achievement than those not part of the intervention. The effect size was rather stable across ages, with the highest effects among 6<sup>th</sup> to 8<sup>th</sup> graders (odds ratio 2.8) and lowest among 9<sup>th</sup> to 12<sup>th</sup> graders (odds ratio 2.1). Of the 74 analyzed papers, nine papers reported results from 11 autonomy-support interventions (ASIPs) addressing teachers' motivational approaches and observing its consequences on academic motivation and student engagement. The average effect on students' motivation and engagement across these studies was 0.70 (Cohen's *d*) corresponding to an odds ratio of approximately 3.6 (Lazowski & Hulleman 2016).

Table 2. The sixteen included studies.

Author Year Title	Sample/groups	Intervention	Mediation	Outcome	Time point for follow up	Results	Notes & Limitations	Extra
Amado et al. 2014 <i>Effect of a Multi-Dimensional Intervention Programme on the Motivation of Physical Education Students</i>	Teachers: N = 1 A novice physical education teacher  Students: N = 47 4th year secondary education students  Spain	The teacher had two classes, assigned to either the experimental or control group. 12 sessions, with two weekly 50-minute sessions. The teacher attended a seminar on Self-Determination Theory (SDT), and how to deliver autonomy support. The seminar lasted for six hours and was given by specialists.	None stated	Satisfaction of basic psychological needs, perception of own competence, and motivational regulation (level of self-determination).	In direct proximity to intervention.	The students in the experimental group showed significantly more satisfaction of competence and satisfaction of autonomy, compared to the control group. No significant difference in perceived competence between the groups was found.	Only one teacher. An increase in sample size, including more experienced teachers would be valuable. The novice teacher was very interested in participating and learning new teaching strategies, and this level of enthusiasm might be different in experienced teachers. This type of intervention/program requires a lot of time and effort, which should be taken into consideration in future interventions.	Change in parents' or teachers' behavior: YES teachers  Outcome for: Students
Chatzisarantis et al. 2009 <i>Effects of an intervention based on Self-Determination Theory on self-reported leisure-time physical activity participation</i>	Teachers: N =10 high-school physical education teachers  Students: N = 215, age: 14–16 years.  UK	Teachers, who first were trained in SDT, delivered the intervention for five weeks. The teachers in the treatment condition were trained to adopt an autonomy-supportive interpersonal style (to provide positive feedback, rationale, acknowledge difficulties and	Autonomous motivation. Past physical exercise participation.	Intention for physical activity, time for physical activity, frequency of physical activity, autonomy-supportive behavior.	5 weeks post-intervention and a follow-up. (Participants were prompted to engage in leisure-time physical activities for 5 weeks after the intervention).	Benefits to teachers: greater autonomy support.  Benefits to students: greater autonomous motivation, greater intention and time for physical activity, greater frequency of leisure-time physical activities.	The study required participants to organize and plan their leisure-time physical activity participation on their own, which is demanding. Small sample size. Self-reported measure of physical activity behavior that referred to a relatively long period – responses may be distorted due to	Change in parents' or teachers' behavior: YES teachers  Outcome for: Students

		enhance sense of choice). Rationale was provided by using meaningful arguments, endorsing the health benefits and mood-enhancing effects of physical exercise.				The students in the experimental group perceived their teachers to provide choice and to be meaningfully related to them, and therefore reported that physical education was an important and enjoyable subject.	memory bias, which means that the student reports may not be fully reliable.	
Cheon et al. 2012 <i>Experimentally Based, Longitudinally Designed, Teacher-Focused Intervention to Help Physical Education Teachers Be More Autonomy-supportive Toward Their Students</i>	Teachers: N = 19 experienced, secondary school PE teachers  Students: N = 1158  South Korea	13 weeks duration. Teachers were randomly assigned to either an experimental or a delayed-treatment control group. Part 1 of the ASIP was a work-shop with group discussions about the feasibility, potential obstacles, and ideas related to acting autonomy-supportive. Part 2 took place six weeks later, and began with a brief PP presentation of autonomy-supportive teaching. Teachers then engaged in group discussions about the autonomy-supportive behaviors they had experimented with. Part 3, 6 weeks later, centered on sharing ideas about how to be autonomy-supportive.	Students psychological need satisfaction. Gender (as a covariate).	Autonomous motivation, amotivation, classroom engagement, perceived skill development, intentions for future physical activity, and PE-specific course achievement.	Three points of data collection. First in March, second in May, and third in July. (6 month follow-up at end of semester).	Trained raters scored the teachers in the experimental group as acting in a more autonomy-supportive manner than teachers in the control group.  The students of teachers in the experimental group showed improvements in all dependent measures.	The observed effect sizes tended to be larger in the second half than in the first half of the semester, suggesting that supplementing the initial pre-semester intervention with on-going, in-semester teacher training enhanced the original intervention experience.  The study did not assess the benefits of the program to the teachers. The study relied heavily on self-report data.  A gender gap was observed: males showed a more motivationally constructive profile in PE class than did females.	Change in parents' or teachers' behavior: YES teachers  Outcome for: Students and teachers



<p>Cheon et al. 2013</p> <p><i>Do the benefits from autonomy-supportive PE teacher training programs endure? A one-year follow-up investigation</i></p>	<p>A one year follow-up of Cheon et al. 2012.</p> <p>Teachers: N = 17 (the experimental group consisted of eight PE teachers from the 2012 year study).</p> <p>Students: N = 953 middle- and high-school students.</p> <p>South Korea</p>	<p>Trained raters scored teachers' instructional behaviors and teachers in the experimental group completed a two-item questionnaire. The first item was: "Compared to last year when you completed the informational session on how to be autonomy-supportive toward your students, would you say that you, this year, were more autonomy-supportive, less autonomy-supportive, or about the same in terms of autonomy support?" The second item was an open-ended follow-up to the first question, "What reason or reasons explain why you checked the option you checked in question 1?"</p>	<p>Gender (as a covariate)</p>	<p>Autonomous motivation, amotivation, classroom engagement, perceived skill development, intentions for future physical activity, and PE-specific course achievement.</p>	<p>1 year</p>	<p>Teachers in the experimental group were scored by raters and perceived by students as more autonomy-supportive and less controlling, and their students reported greater autonomous motivation.</p> <p>The teachers in the experimental group reported being significantly more autonomy-supportive than a year earlier.</p> <p>The results confirmed that the training-induced benefits endured over time and that the effects also were seen among students.</p>	<p>Lack of random assignment to conditions. The dependent measures assessed only students' positive classroom functioning and course outcomes (amotivation being the only exception).</p> <p>Another limitation is that students of the teachers in the control group showed gains in several measures at follow-up points, including perceived autonomy support, autonomy and competence need satisfaction, classroom engagement, and perceived skill development.</p>	<p>Change in parents' or teachers' behavior: YES teachers</p> <p>Outcome for: Teachers and Students</p>
<p>Cheon et al. 2014</p> <p><i>The Teacher Benefits From Giving Autonomy Support During Physical Education Instruction</i></p>	<p>Teachers: N = 27 elementary, middle, and high school PE teachers.</p> <p>Students: N = 1229</p> <p>South Korea</p>	<p>Part 1 of the ASIP was a three-hour workshop that began with a warm-up activity in which teachers read two teaching scenarios, one describing highly autonomy-supportive teaching and another describing highly controlling teaching,</p>	<p>Teacher self-efficacy. Teachers basic need satisfaction. Study lacked the power to conduct mediation analyses (p343)</p>	<p>Teaching motivation (psychological need satisfaction, autonomous motivation to teach, and adoption of intrinsic goals)</p> <p>Teaching skill (teaching efficacy for instructional strategies and for student</p>	<p>Measurement and post-intervention and at a follow-up</p>	<p>Teachers in the experimental group showed greater teaching motivation, teaching skill and teaching wellbeing.</p> <p>Raters scored teachers in the experimental</p>	<p>Teachers in the control group were not given a developmental opportunity in the same way teachers in the experimental group.</p> <p>It is not known if the positive benefits from ASIP endured once the ASIP-based support</p>	<p>Change in parents' or teachers' behavior: YES teachers</p> <p>Outcome for: Teachers and students</p>

		and answered questions about how well these scenarios described their own teaching. Part 2 was a brief PP presentation of autonomy-supportive teaching. The teachers then tried to enact autonomy-supportive instructional behaviors with their students. Part 3 of the intervention was a seminar where experiences were shared among participants).		engagement).  Teaching wellbeing (vitality during teaching, job satisfaction, and emotional and physical exhaustion).		group as enacting significantly more autonomy-supportive. The raters were familiar with both PE instruction and the SDT framework.	system was removed and teachers were left on their own to instruct new groups of students.	
Cheon et al. 2015  <i>A classroom-based intervention to help teachers decrease students' amotivation</i>	Teachers: N = 16 secondary school physical education (PE).  Students: N = 598 secondary school  South Korea	Intervention was guided by a two-hour workshop, with personalized warm-up activities designed to encourage teachers to reflect on their own motivating style, a two-hour afternoon group discussion, designed as an opportunity for teachers to voice their concerns, and a brief powerpoint presentation of autonomy-supportive teaching and to decrease their usage of controlling instructional strategies. Teachers in the control group were placed on a waiting	Gender as a covariate	Students' amotivation, students' need satisfaction and classroom engagement, perceived autonomy-supportive teaching and perceived controlling teaching.	Post-intervention test at the end of semester (unclear number of months).	Teachers in the experimental group were scored by objective raters, and perceived by students as more autonomy-supportive and less controlling.  The students in the experimental group reported greater psychological need satisfaction, greater engagement, and lesser amotivation.  According to the teachers themselves, they reported that the	Small sample size, and the sample was focused on Korean secondary school PE classes, which might limit the study's generalizability in terms of nation, grade level, and subject matter taught.  Note: In Korea, student autonomy is not as valued as it is in the West.	Change in parents' or teachers' behavior: YES teachers  Outcome for: Students

		list to receive the same teacher-training intervention after the study concluded.				ASIP helped them improve their classroom motivating style, and produced a stronger sense of importance, usefulness, and satisfaction.		
Froiland 2011  <i>Parental autonomy support and student learning goals: A preliminary examination of an intrinsic motivation intervention</i>	N = 30 parents and 30 children  4 <sup>th</sup> and 5 <sup>th</sup> grade children along with their parents.  USA	A seven week quasi-experimental study, where parents in the experimental group received an intervention consisting of seven training sessions designed to teach an autonomy-supportive parenting style and to facilitate intrinsic learning goals. The parents learned autonomy-supportive communication techniques that included helping their children set learning goals for homework assignments. The comparison group didn't receive any training.  Facilitated by a researcher with advanced training in psychological consultation and family systems.	Gender and pre-treatment scores on motivation were statistically controlled for	Homework autonomy and affect, intrinsic motivation.  Relative Autonomy Index  Inventory of Homework Feelings  Children's Academic Intrinsic Motivation Inventory  Parent Questionnaire of Child Motivation to Learn	Parallel with the intervention and post-intervention	Children in the experimental group reported increased positive affect toward homework relative to the comparison group. Parents in the treatment group perceived their children as becoming more autonomously motivated relative to the comparison group.  Children did not significantly improve on general measures of self-reported academic intrinsic motivation or relative autonomy.	Because many people conflate autonomy support with providing unlimited choice, the term inspirational motivational style (IMS) was used as the label for the construct.  Limitations: random assignment was not employed. The experimental group consisted largely of boys whose parents saw them as originally lower in motivation, whereas the comparison group involved more girls and children whose parents originally felt that they were higher in intrinsic motivation.	Change in parents' or teachers' behavior: YES parents  Outcome for: Parents and children
Guay et al. 2015  <i>Examining the effects of</i>	Teachers: N = 18 elementary	The professional development program, CASIS, involved a	Students' prior writing achievement was	Students' measures: regulation types in writing French.	Follow-up or second posttest was four months	Students: increased intrinsic motivation and	Autonomy support is just one of several components of the	Change in parents' or teachers'

<p><i>a professional development program on teachers' pedagogical practices and students' motivational resources and achievement in written French</i></p>	<p>school teachers (all women)</p> <p>Students: N = 277 of the teachers' students</p> <p>Canada</p>	<p>two-day workshop, where teachers were taught to use collaboration, <i>autonomy support</i>, authentic tasks, involvement, and structure. The CASIS workshop included four learning units, included a detailed explanation of motivational resources and why they are important. Written case studies were provided, as was a series of videos. Teachers were instructed to observe their own practices (videotaped) in light of the five proposed pedagogical practices.</p>	<p>used as a covariate in the analysis.</p>	<p>Perceived competence in writing.</p> <p>Relatedness to teachers.</p> <p>Post-test dictation</p> <p>Teachers' measures: pedagogical practices and students' writing achievement.</p>	<p>after first posttest.</p> <p>Two well-trained research assistants were asked to evaluate the pedagogical practices.</p>	<p>intrinsic regulation was shown in the students with teachers that attended CASIS, and they had higher scores than the control group on the post-test dictation.</p> <p>The control group showed a decrease in intrinsic motivation.</p>	<p>interventions used in this study.</p> <p>The study scope didn't extend to determine whether CASIS was more effective for different subgroups of students.</p> <p>Did not investigate whether CASIS had some benefits for the teachers themselves.</p>	<p>behavior: YES teachers</p> <p>Outcome for: Teachers and students</p>
<p>Meng et al. 2016</p> <p><i>The effectiveness of an Autonomy-Supportive Teaching Structure in Physical Education</i></p>	<p>Teachers: N = 8 full-time certified experienced PE teachers from two secondary schools.</p> <p>Students: N = 648 secondary school students.</p> <p>Singapore</p>	<p>Two treatment groups (autonomy-supportive structure and autonomy-support only) and one control group. A ten-week, school-based, autonomy-supportive structure (ASTS-PE) teacher training intervention in PE. Stage 1 in the intervention consisted of a three-hour workshop, that began with a reflective activity in which teachers read two teaching scenarios</p>	<p>Gender</p>	<p>Students: psychological need satisfaction, perceived autonomy-support, relative autonomy index (RAI), engagement and objective moderate-vigorous physical activity (MVPA) levels in PE.</p>	<p>The teachers in the experimental conditions implemented changes in their teaching style for 10 weeks. Measures were taken directly after intervention.</p>	<p>Students in the autonomy-supportive structure group show better overall outcomes compared to the other two groups. Students in the ASTS-PE group showed higher fulfillment of basic psychological needs, higher motivation, higher perceptions of autonomy support, higher engagement and were more</p>	<p>Both autonomy support and structure are needed to maximize effectiveness in PE lessons.</p> <p>The study did not measure the effects of the autonomy-supportive intervention-training program on the teachers.</p>	<p>Change in parents' or teachers' behavior: YES teachers</p> <p>Outcome for: Students</p>

		(one that described highly autonomy-supportive teaching and another that described highly controlling teaching), and answered questions about how well these scenarios described their own teaching. Stage 2 consisted of a brief PP presentation of autonomy-supportive teaching. Stage 3 consisted of a group discussion that centered largely on sharing autonomy-supportive and structure ideas.				active during PE. There was a significant main effect for treatment and gender, with male students significantly more active than female students. Female students in the autonomy-supportive structure condition were more physically active than autonomy-supported only female students.		
Moreno-Murcia et al. 2016 <i>The effects of autonomy support in physical education classes</i>	Students: N = 145 aged 10 - 12. 91 in the experimental group and 51 in the control group.  Teachers: N = 1 professor of physical education.  Spain	Before the intervention began, the teacher in the experimental group participated in a workshop on autonomy support. The intervention then took place during 21 physical education classes held twice a week.		Basic psychological needs, intrinsic motivation, perception of autonomy support, importance attributed to physical education and rate of regular physical activity. Intent of future practice.	In direct proximity to the intervention.	The experimental group experienced significant increases in perceived autonomy, intrinsic motivation, importance of physical education and intention to do regular physical activity.	Other environmental factors, social and family, that could influence the cognitive, affective and behavioral changes of students, were not counted for.	Change in parents' or teachers' behavior: YES teachers  Outcome for: Students
Patall et al. 2010 <i>The effectiveness and relative importance of choice in the classroom</i>	N = 207  High school students  USA	Randomized field experiment, during four weeks, where students were assigned to a homework-choice group and a no-	Perceived provision of choice	Intrinsic motivation, perceived competence, perceived value, perceived choice, homework completion rate, homework effort and exam	Directly after intervention	Homework-choice condition was a significant predictor for interest and enjoyment in homework, feeling	The importance of perceived provision of choice was examined in the context of student perceptions of their teachers' support for autonomy more	Change in parents' or teachers' behavior: NO  Outcome for: Students

		<p>homework-choice group. Homework-choice participants were given a choice of two similar homework assignments. No-choice participants were yoked to a homework-choice participant and given the same homework assignment as their yoked classmate.</p> <p>Facilitated by pre-service teachers, who prepared and administered the experimental treatments after receiving training from the first author.</p>		<p>performance.</p> <p>Perceived choice Interest/enjoyment Perceived competence Effort Value Pressure/tension Homework completion rate Unit test score</p>		<p>more competence for homework, completed more homework, and scored better on their unit test scores compared to students not given a choice of homework.</p>	<p>broadly defined. It is possible that students who are more intrinsically motivated toward schoolwork are also more likely to perceive their teachers as engaging in autonomy-supportive practices and providing choices.</p> <p>Providing multiple homework options for every homework assignment placed an additional burden on the teachers.</p> <p>Limitations: missing data (particularly for lower achieving students) in the experimental portion of the study limit and the generalizability of the results. The intervention was of short duration, and conducted only with preservice teachers (no veteran teachers).</p>	
<p>Perlman 2013</p> <p><i>Assisting Preservice Teachers Toward More Motivationally Supportive Instruction</i></p>	<p>Teachers: N = 62 preservice PE teachers.</p> <p>Students: N = 752 9<sup>th</sup> graders</p> <p>USA</p>	<p>The intervention was conducted through a course webpage. The participants/teachers were provided with (a) an understanding of SDT, (b) information about student benefits of learning in an autonomy-supportive</p>	<p>Not clearly stated.</p>	<p>Teachers' instructional behavior, teachers' perceptions of autonomy support, student motivation and students' perception of autonomy support.</p>	<p>In direct proximity to intervention.</p>	<p>Significant positive change in perceived autonomy support for both teachers and students. Teachers exposed to the intervention demonstrating a higher frequency of autonomous</p>	<p>Pre-test post-test design. Conducted the intervention online limited the ability to model autonomous behaviors (e.g., language).</p>	<p>Change in parents' or teachers' behavior: YES teachers</p> <p>Outcome for: Teachers and students</p>

		way and (c) opportunity to practice and develop their supportive teaching practices. An expert in the field of SDT evaluated material developed by the PTs. The course lasted a 16-week academic semester.				interactions compared with teachers in the control group. No change in student motivation.		
Reeve et al. 1998  <i>Autonomy Support as an Interpersonal Motivating Style: Is It Teachable?</i>	N = 159 students enrolled in a university teacher certification program.  USA	One 80-min training session. Teachers were placed in an autonomy experimental group, a control group with controlling motivation messages or a second control group, in which teachers were exposed to instructional strategies that were of a non-motivational/neutral nature. In the ASIP group, formal training experience was given that exposed them to autonomy-supportive instructional strategies as a plausible, useful, and credible approach to motivating students. Teachers were asked to write a real life essay about their own motivational style. Facilitated by volunteers (and researchers).		Causality orientation (autonomous or controlling teaching style), familiarity with the motivational models.	1 month post-intervention	Autonomy oriented teachers assimilated the intervention information rather easily, while control oriented teachers accommodated the information only in proportion to the extent they perceived it to be classroom applicable. Participants in the autonomy-supportive group wrote highly autonomy-supportive narratives. Participants in the neutral instructional group wrote neither autonomy-supportive nor controlling narratives, and participants' exposure to the	The study addressed motivating styles in general, rather than the autonomy-supportive style specifically.  Presumably, accommodation of the autonomy-supportive information occurred only for those control oriented participants who were able to overcome their initial resistance to find value, utility, and credibility in the information about autonomy support.  No long-term follow-up. Did not examine if the exposure to brief training experiences changed preservice teachers' actual, in-class ways of motivating students.	Change in parents' or teachers' behavior: Subjects were student teachers.  Outcome for: see above

						controlling instructional strategies wrote highly controlling narratives.  The participants (preservice teachers) reported being significantly more familiar with controlling instructional strategies than they were with the autonomy-supportive strategies.		
Reeve et al. 2004  <i>Enhancing students' engagement by increasing teachers' autonomy support</i>	N = ~ 24.0 students per classroom  High school teachers (veteran teachers)  USA	Randomized field experiment, ten weeks long, with a treatment condition and a delayed treatment control. Treatment teachers completed the training, with informational sessions and an independent study delivered online, during the initial phase of the study, while delayed-treatment teachers completed the training after the study was finished. The experiment included sessions on how to be autonomy-supportive toward students. Facilitated by researchers. Raters, who were blind to the	None stated	Autonomy-supportive behaviors (such as promoting choice, value, and flexible thinking in students, and listening to complaints). Student engagement.	5 weeks post-intervention	Trained teachers used significantly more autonomy-supportive behaviors with students than the non-trained teachers. The more the teachers used autonomy support during instruction, the more engaged were their students. Teachers' autonomy support was an even better predictor of students' classroom engagement than was students' own engagement during an earlier class.	Raters scored two aspects of students' engagement: students' active task involvement during instruction and students' voice and initiative in trying to take personal responsibility for their learning (influence attempts).  Limitations: Sample size. The large effect sizes might be attributable, in part, to a possible rating artifact. Once teachers saw the raters in their classrooms, they might have altered their instructional behaviors in a direction that would please the raters.	Change in parents' or teachers' behavior: YES teachers  Outcome for: Teachers and students



		teachers experimental conditions, observed all 20 teachers and their students.					Because raters scored both teachers' autonomy support and students' engagement, this might potentially inflate the magnitude of the findings.	
<p>Reeve et al. 2016</p> <p><i>Teachers become more autonomy-supportive after they believe it is easy to do</i></p>	<p>Teachers: N = 42 full-time PE teachers in secondary schools</p> <p>Students: N = 2380</p> <p>South Korea</p>	<p>Two weeks prior to the beginning of the semester, teachers in the experimental group participated in a six-hour ASIP. Same ASIP-design as Cheon and Reeve 2013.</p> <p>Article states 6 hours but in the description of the intervention it is described as 3+2.5 +2 hours</p>	<p>Mediation analyses for easy-to-implement belief and effectiveness belief.</p>	<p>3 measures of autonomy-supportive teaching. Teachers reported their autonomy support through self-rated autonomy support beliefs, personal endorsement of autonomy-supportive teaching, and future intentions to use autonomy-supportive teaching.</p> <p>Students: Learning Climate Questionnaire</p>	<p>Post-intervention and follow-up, 4 months.</p>	<p>Teachers in the experimental group showed significant increases in all three measures of autonomy support. The participation in the ASIP helped teachers internalize that autonomy-supportive teaching was more effective and easier to implement than they believed prior to the ASIP.</p> <p>Students of teachers who participated in ASIP rated the teachers as more autonomy-supportive than did students in the control group.</p> <p>Autonomy support decreased significantly for teachers in the control group.</p>	<p>This study hypothesized that ASIPs work to the extent they help (physical education) teachers conceptually change their beliefs about how effective it is and how easy it is to implement autonomy-supportive teaching.</p> <p>One limitation was that data were subjective self-reports, rather than objective behaviors.</p> <p>Did not assess ASIP-induced student outcomes or benefits.</p>	<p>Change in parents' or teachers' behavior: YES teachers</p> <p>Outcome for: Teachers</p>

<p>Tessier et al. 2008</p> <p><i>The effects of an experimental program to support students' autonomy on the overt behaviors of physical education teachers</i></p>	<p>Teachers: N = 5 middle- and high-school PE teachers</p> <p>Students: N = 96 high school students</p> <p>France</p>	<p>The experimental group included two PE teachers who were educated on the benefits of an autonomy-supportive style and then followed an individualized guidance program during eight lessons.</p>	<p>Gender was controlled, not in mediation analysis</p>	<p>Autonomy support. Students' self-determined motivation in PE.</p>	<p>The intervention was eight weeks long, and no follow up has been done. Only pre and post eight weeks.</p>	<p>Teachers in the experimental group used more autonomy-supportive, praise and neutral behaviors than those in the control group, but no difference emerged in relation to controlling behaviors.</p> <p>Boys received more neutral and controlling communications, and were more praised than girls.</p>	<p>It is not known whether the control and experimental groups were statistically equivalent in characteristics such as class size and socio-economic status at the beginning of the study. Small sample size. That teachers in the experimental group used more autonomy-supportive strategies but did not decrease in controlling strategies might generate confusion for students.</p>	<p>Change in parents' or teachers' behavior: YES teachers</p> <p>Outcome for: Teachers</p>
---	---	---	---	--	--	--	---	--

## 6 Discussion

Theories about student motivation and student engagement developed on the basis of experimental research in psychological labs have been used to develop and test applications in real educational settings for the last 15 years. Carefully designed intervention studies, based on experimental designs, have been conducted in real life educational settings and have replicated and advanced previous knowledge on motivation and learning. This report presents findings from a literature search aimed at mapping and summarizing the scientific papers published on the effects of autonomy-supportive intervention programs (ASIPs) in academic settings. Sixteen original papers (Table 2) and two meta-analyses (McDonough et al. 2013, Su & Reeve 2011) were summarized and discussed in this report. In summary, ASIPs not only increased teachers' autonomous-supportive behavior in the classroom but these changes also had consequences for students' academic motivation. The ASIPs also had an effect on teachers' teaching skills as well as on their wellbeing. In the studies where students' engagement and skills were evaluated, the ASIP had a positive effect on both. It is worth noting that the effect of an ASIP is not short lived. One year after an ASIP, a follow-up study proved that the effect remained (Cheon & Reeve 2013).

The meta-analysis conducted by Su and Reeve (Su & Reeve 2011) showed that an autonomy-supportive motivational style towards others is teachable and that teachers participating in such intervention programs make important changes in their teaching style that are observable by independent raters. The size of these effects was moderately large to large. Of the intervention programs that were evaluated, some worked better than others. Experiences of what worked have been incorporated in a guide or manual for best practice of both ASIPs in general and autonomy-supportive teaching in particular (Reeve 2016, Reeve & Cheon 2014). In particular, interventions have been (especially) effective in targeting the use of controlling language in classroom situations. Specifically, self-observations of one's use of controlling language during instruction and realizing that one's motivational approach includes pressures to make students act, think, or feel in a particular way (reflecting an ignorance of the students' perspective), seems to be a good starting point for behavioral change. Such training will include decreasing the use of explicitly controlling language such as "you must", "you have to", or "you ought to". In addition, it may be important to identify those implicit beliefs one holds, sometimes unintentionally, that may be the basis for using controlling language. Other "hidden" forms of (controlling) verbal behavior could refer to tactics to appeal to students' feeling of guilt, or to trigger ego involvement and contingent self-worth.

The meta-analysis by Lazowski and Hulleman (Lazowski & Hulleman 2016) of 74 scientific studies showed that interventions based on common social psychological theories of motivation can affect motivation, learning, and performance.

Interventions seemed to have comparable effects regardless of age group (that is from kindergarten to college). On average, motivation interventions yielded an effect of 0.49 on learning or performance (Cohen's *d*). This equates to an odds ratio of approximately 2.2, reflecting that a youth participating in a motivation intervention will 2.2 times more often learn more or perform better than a youth not part of a motivation intervention. When comparing different interventions, their effect based on the self-determination theoretical framework (i.e., autonomy support interventions targeting teachers' motivational styles, 11 studies) yielded an average effect of 0.70 (Cohen's *d*) on students' learning, performance, or improvement (corresponding to an odds ratio of approximately 3.6). Comparing only those interventions that have been tested more thoroughly (i.e., five studies or more in different educational contexts), autonomy-supportive interventions addressing teachers' motivational style were shown to generate the largest effects on student outcomes. This is impressive since the effects of ASIPs could be interpreted as indirect effects. Thus, when most of the other interventions tried to influence students' motivation directly, ASIPs focused on changing teachers' motivational styles to become more autonomy-supportive and then observed the consequences of changes in teachers' behavior on academic motivation and student engagement.

A few studies included in the Lazowski and Hulleman meta-analysis did not study the effects of a comprehensive ASIP (Lazowski & Hulleman 2016). Instead, some studies focused only on one part of teacher behavior (e.g., instruction) and only manipulated variation in one specific strategy of autonomy-supportive behavior (e.g., decreasing of controlling behavior). Although those studies yield high quality experimental evidence, strengthening the theory of how teachers' behavior affects students' motivation, the studies do not investigate the effectiveness of ASIPs on teachers' motivational styles or its possible consequences on students' academic motivation and engagement. However, since Lazowski and Hulleman (Lazowski & Hulleman 2016) did exclude studies that mainly addressed health outcomes, some of the largest experimentally evaluated ASIPs were not included in that meta-analysis (i.e., studies on physical education). The implication of including studies limited to one aspect of an ASIP and excluding comprehensive ASIP studies focusing on health (i.e., physical education) is most possibly that the effect size presented is an underestimation of the true effects.

In this present report (and in the literature that we have surveyed), teachers' behavior during instruction and feedback has been described as motivational styles (or approaches) that teachers choose to apply based on their experiences of best practice or personal preferences (or use due to lack of knowledge on how to facilitate motivation or while working on routine). Although we stress that teachers' motivational approaches define the motivational context and that this influences student motivation and engagement, this does not mean that teachers' behavior is the only or the most important factor when targeting students' academic motivation.

Most often, teachers' motivational approaches are consequences of how the school administration and school principals set the overall culture and conditions of a school, how the administration imposes restrictions regarding the curriculum and how they implement the administrative structure. Thus, it is important to acknowledge the contextual antecedents of teachers' motivational styles (Haerens et al. 2016, Pelletier & Rocchi 2016). This may be especially important in Sweden since large scale surveys and health statistics indicate that Swedish teachers' working environments are pressured and teachers report the highest combined levels of high job demands and low levels of influence over their work situation (Arbetsmiljöverket 2014, Skolverket 2016).

The field of ASIPs is led and dominated by the work of Professor Johnmarshall Reeve. Many of the studies reviewed in this paper, as well as one of the meta-analyses, are from his laboratory. We have chosen to base our understanding of the underlying theory according to Reeve's theoretical view on it and this also informs our main interpretations of results that are based on work from Reeve's research. We recommend reading the work by Reeve and colleagues on ASIPs as it gives fundamental details on the content and delivery of ASIPs. Moreover, Reeve and colleagues have published a lot on how to implement and evaluate ASIPs. Before adopting ASIPs for use in a Swedish context, however, we also recommend in-depth readings of other published training programs (Aelterman et al. 2013, Assor 2016, Froiland 2011, Guay et al. 2016, Kaplan & Assor 2012, Reeve 2016, Tessier et al. 2010) and analyses of what seems to work best under what circumstances (Reeve 2009, Reeve & Cheon 2014, Su & Reeve 2011).

Would students in the Swedish educational context benefit from a more frequent use of autonomy-supportive strategies in the classroom? There is no study today to answer this question, so we are left to speculate and raise some concerns. Below, this question is discussed from the perspective of generalizability and from an analysis of how ASIP may (or may not) apply to specific problems in Sweden. Firstly, a greater majority of the studies surveyed in this report addressed teachers' motivational approaches and student outcomes in the context of physical education (PE). How these results generalize beyond physical education needs to be addressed with the same type of high-quality intervention studies performed within the context of PE. However, there is not a total lack of studies within other fields of education and taken together, these other studies also clearly show the benefits of using more autonomy-supportive strategies in teaching (Su & Reeve 2011). A definite strength with autonomy-supportive interventions as developed by Reeve, that will be directly applicable in the Swedish context, is the form of the delivery of the intervention, i.e., working with teachers to implement a motivation-supportive environment. Also, the overarching approach of taking the other person's perspective (i.e., the initial step in all ASIP interventions) is a highly relevant approach in Sweden as this facilitates tuning in to the context and learning more about what hinders motivation and

engagement in Swedish classrooms. In this “perspective taking” approach, one is mindful and open to feedback and this may be one way to sift out, discover, and understand what obstacles may be standing in the way of efficient education (Langer 2016).

To what extent are problems with motivation in Swedish schools related to the motivational strategies used? Based on international comparative studies of different educational contexts, OECD recently analyzed and interpreted problems specific for Sweden (OECD 2015a, OECD 2015b, OECD 2015c). Previously, Sweden has internationally been thought of as having a high-performing education system. Strengths in the system were students’ relatively high interest for learning (academic motivation), the relatively good student-teacher relationships, and students’ positive attitudes towards their education, including a sense of education being useful. These strengths could easily be interpreted as reflecting that the use of autonomy-supportive motivational approaches is already in place in the Swedish educational context. However, when analyzing students’ academic efficacy, OECD found that, in comparison to other countries, Swedish students (1) reported relatively low levels of perseverance and reported to easily give up in the face of challenges, and (2) frequently held a belief that underperformance is caused by factors not linked to their own lack of effort (OECD 2015a). Thus, motivation does not seem to translate into engagement or motivation is easily dismissed. Both data from the PISA investigations (OECD 2015b, OECD 2015c) and meta-analyses on effects of motivation interventions on performance (Lazowski & Hulleman 2016) show that there is a strong association between effort, perseverance, and performance (stronger in Sweden than in the other PISA countries). The conclusion is that issues of effort, mastery strategies, outcome expectations, and perseverance of students need to be adequately addressed. Therefore, one conclusion may be that autonomy-supportive strategies need to be combined with motivational strategies that support students’ efforts, mastery strivings, and perseverance in the face of challenges. From an SDT perspective, these aspects of student engagement are thought to be influenced by an accompanying use of competence-supportive strategies (i.e., together with autonomy-supportive strategies). These competence-supportive strategies are outlined in the cognitive evaluations theory (Reeve & Cheon 2014) but is, however, yet to be implemented in ASIPs or more broader motivational-supportive intervention programs. Importantly, the question is not autonomy-supportive strategies or competence-supportive strategies, but delivering structure in an autonomy-supportive way. The importance of this issue has recently been further stressed by researchers from outside from the SDT camp (Duckworth & Gross 2014, Duckworth et al. 2011, Dweck et al. 2014, Ericsson et al. 1993).

The studies presented in this present report clearly show that ASIP can help teachers to develop and enact autonomy-supportive strategies and that a more frequent use of these motivational strategies changes the classroom dynamics and produces broad student benefits. In the initial discussions or during the first workshop in an ASIP, participants often discuss their concerns about the consequences of changing their motivational approach (Reeve & Cheon 2014). One concern about autonomy support has to do with an assumption that being autonomy-supportive means being permissive (in Swedish – “att curla barnen”), and that control/authority is a fundamentally important ingredient in parenting or teaching. From an SDT perspective, children’s behavior need not ultimately be controlled, targeted, or prescribed, but may alternatively be guided, mentored, and supported. In general, however, teachers readily see the benefits of an autonomy-supportive approach for students and expect students to benefit. But teachers often fear an increased workload for themselves and that use of these strategies will be emotionally demanding for themselves. These are important concerns since quantitative and emotional demands at work have been shown to dramatically increase the risk of job burnout, depression, and sleeping problems (Statens beredning för medicinsk utvärdering 2013, Statens beredning för medicinsk utvärdering 2014). Therefore, a recent study set out to investigate the emotional costs (levels of energy and occupational efficacy, job burnout, and job satisfaction) for teachers when applying more autonomy-supportive strategies in their teaching (Cheon et al. 2015). The results were striking; when compared to teachers in a control group, teachers who developed and came to use autonomy-supportive strategies as core tools in their motivational approaches did not show signs of a higher workload or emotional exhaustion. On the contrary, data showed that these teachers benefitted from the ASIP as much (or perhaps more) as the students who received it. Thus, for those teachers who learned and enacted autonomy-supportive strategies, prospective longitudinal data showed a large increase in their job satisfaction and vitality, as well as a large decrease in their levels of job burnout (Cheon et al. 2015). In addition, the ASIP interventions also showed large effects on teaching efficacy, with increased levels of their teaching efficacy for instructional strategies and for student engagement. The mechanisms behind these changes were discussed from the perspective of how an increase in basic psychological need satisfaction among teachers may be the mediators of change (Cheon et al. 2015). An alternative explanation could be suggested from self-efficacy theory (Bandura 1997), where studies have shown the broad benefits of high teaching efficacy (Zee & Koomen 2016). Either way, we believe that this study will be a starting point for new research on how giving and receiving autonomy-support will influence quality in both professional and private relationships that have the potential to both influence and go well beyond the teacher-student collaboration for social sustainability.

When reading the empirical studies, as well as the two meta-analyses and other summaries of research in this area, we get the impression that this field of research

has moved far beyond the initial strivings for finding strategies to support others' autonomy. Indeed, to label the suggested strategies as autonomy-supportive strategies may be a misnomer. The causal hypothesis suggests that autonomy-supportive strategies support autonomy, but we think that there might be other motivational constructs addressed at both sides of this "cause and effect equation". Using constructs defined in the field of SDT, need-supportive strategies may be a more relevant label to encompass all validated strategies. At least for us, some of the strategies (e.g., to take others perspective; invite and welcome others thoughts, reflections, and perspective) have more to do with supporting relatedness. Still denoting these strategies as need-supportive may not be broad enough. For example, some of the instructional strategies relevant for identifying, vitalizing, and supporting others' inner motivational resources are obviously targeting other core motivational resources than just autonomy (and other psychological needs). For now, we like to think that all those strategies are representing a fundamental interpersonal orientation, motivational tactics, or self-regulatory principles (see Figures 1-4 above). But, when used in combination, those strategies are thought to be supportive of the vitalization of others' inner motivational resources (i.e., to be motivational-supportive). Moreover, as these strategies support more motivational resources than just autonomy, what should we call the outcome? Again, using constructs from SDT, one alternative may be to reinvent the construct that originally was the starting point for SDT, which is intrinsic motivation. We think that this makes sense since vitalizing the inner motivational resources has the potential to move people from extrinsic forms of motivation to an intrinsic form. Thus, Intrinsic Motivation Supportive Intervention Programs could perhaps be the new name for the programs formerly known as Autonomy-Supportive Intervention Programs. This will also clearly point to all these constructs (contextual antecedents, motivational resources, and the outcome of intrinsic motivation) being embedded in the "motivational box", in the broader Motivation => Engagement => Outcomes model. The importance of this statement is that there is a mediator between intrinsic motivation and highly valued outcomes such as learning, capability, achievement, proficiency, etc. This mediator, engagement, includes what we actually do when striving to reach our goals, develop as people, as well as living a life that is valued. This is about effort, perseverance, deliberate practice, mindful attention, sophisticated cognitive strategies, thoughtful reflections, and agentic, proactive contributions. Thus, intrinsic motivation may be a highly valued state in itself, but its importance for high quality engagement and further outcomes needs to be further elaborated upon (Grant & Shin 2012).

There is a profound advantage in having an opportunity to map the currently tested interventions aimed at creating an environment that stimulates and facilitates people's engagement in very important areas. This will be one step to effectively adapt, translate, and plan Self-Determination Theory guided research in Sweden. The intervention techniques described and tested within SDT could be applicable in many



areas since they are focused on facilitating behavioral change. Motivation is at the core of any attitude or behavioral change whether it is aimed at individual or organisational levels. We need to continuously increase our understanding of what motivates people to develop skills, achieve what they desire, and to live healthy lives. To conduct theoretically based intervention studies is one way to increase this knowledge and will enable us to develop interventions that enhance individuals' study and working conditions. We believe that through the development of motivation supportive programs we can expect to identify many useful approaches, tools, and strategies that will be highly applicable in Swedish educational contexts and within the health care sector.

## 7 References

- Aelterman N, Vansteenkiste M, Van Keer H, De Meyer J, Van den Berghe L, Haerens L. 2013. Development and evaluation of a training on need-supportive teaching in physical education: Qualitative and quantitative findings. *Teaching and Teacher Education* 29: 64-75
- Amado D, Del Villar F, Leo FM, Sanchez-Oliva D, Sanchez-Miguel PA, Garcia-Calvo T. 2014. Effect of a Multi-Dimensional Intervention Programme on the Motivation of Physical Education Students. *Plos One* 9
- Arbetsmiljöverket. 2014. *Arbetsmiljön 2013*. Stockholm: Arbetsmiljöverket.
- Assor A. 2016. An instruction sequence promoting autonomus motivation for coping with challenging learning subjects In *Building autonomus learners. Perspectives from research and practice using self-determination theory*, ed. WC Liu, JCK Wang, RM Ryan, pp. 153-68. Singapore: Springer
- Aurell J, Wilsson L, Bergström A, Ohlsson J, Martinsson J, Gustavsson P. 2015. *Utprovning av den svenska versionen av the Need Satisfaction and Frustration Scale (NSFS). SOM-rapport 2015:29*. Göteborg: SOM-Institutet.
- Aurell J, Wilsson L, Bergström A, Ohlsson J, Martinsson J, Gustavsson P. 2016. *Utprovning av svarsformat till den svenska versionen av the Need Satisfaction and Frustration Scale (NSFS). SOM-rapport 2016:1*. Göteborg: SOM-Institutet.
- Bandura A. 1997. *Self-efficacy: The exercise of control*. New York: W.H. Freeman and Company.
- Chatzisarantis NLD, Hagger MS. 2009. Effects of an intervention based on self-determination theory on self-reported leisure-time physical activity participation. *Psychology & Health* 24: 29-48
- Cheon SH, Reeve J. 2013. Do the benefits from autonomy-supportive PE teacher training programs endure?: A one-year follow-up investigation. *Psychology of Sport and Exercise* 14: 508-18
- Cheon SH, Reeve J. 2015. A classroom-based intervention to help teachers decrease students' amotivation. *Contemporary Educational Psychology* 40: 99-111
- Cheon SH, Reeve J, Lee J, Lee Y. 2015. Giving and receiving autonomy support in a high-stakes sport context: A field-based experiment during the 2012 London Paralympic Games. *Psychology of Sport and Exercise* 19: 59-69
- Cheon SH, Reeve J, Moon IS. 2012. Experimentally Based, Longitudinally Designed, Teacher-Focused Intervention to Help Physical Education Teachers Be More Autonomy Supportive Toward Their Students. *Journal of Sport & Exercise Psychology* 34: 365-96

- Cheon SH, Reeve J, Yu TH, Jang HR. 2014. The Teacher Benefits From Giving Autonomy Support During Physical Education Instruction. *Journal of Sport & Exercise Psychology* 36: 331-46
- Deci EL. 1995. *Why We Do What We Do: Understanding Self-Motivation*. New York: Penguin Books.
- Duckworth A, Gross JJ. 2014. Self-control and grit: Related but separable determinants of success. *Current Directions in Psychological Science* 23: 319-25
- Duckworth AL, Grant H, Loew B, Oettingen G, Gollwitzer PM. 2011. Self-regulation strategies improve self-discipline in adolescents: Benefits of mental contrasting and implementation intentions. *Educational Psychology* 31: 17-26
- Dweck CS, Walton GM, Cohen G. 2014. *Academic tenacity. Mindsets and skills that promote long-term learning*. Bill & Melinda Gates Foundation. 40 pp.
- Ericsson KA, Krampe RT, Tesch-Romer C. 1993. The role of deliberate practice in the acquisition of expert performance. *Psychological Review* 100: 363-406
- Froiland JM. 2011. Parental Autonomy Support and Student Learning Goals: A Preliminary Examination of an Intrinsic Motivation Intervention. *Child & Youth Care Forum* 40: 135-49
- Gough D, Oliver S, Thomas J. 2012. *An introduction to systematic reviews*. London: Sage.
- Grant AM, Shin J. 2012. Work motivation: Directing, energizing, and maintaining effort (and research) In *The Oxford Handbook of Human Motivation*, ed. RM Ryan, pp. 505-19. New York: Oxford University Press
- Guay F, Lessard V, Dubois P. 2016. How can we create better learning contexts for children? Autonomus motivation as a way to foster enhanced educational outcomes In *Building autonomus learners. Perspectives from research and practice using self-determination theory*, ed. WC Liu, JCK Wang, RM Ryan, pp. 83-106. Singapore: Springer
- Guay F, Valois P, Falardeau E, Lessard V. 2015. Examining the effects of a professional development program on teachers' pedagogical practices and students' motivational resources and achievement in written french. *Learning and Individual Differences*: No Pagination Specified
- Gustavsson JP, Hultell D, Rudman A. 2013. *Lärares och sjuksköterskors hälsoutveckling och karriärvägar de första åren efter utbildning. Rapport till AFA försäkring. Rapport B2013:5*. Stockholm: Sektionen för psykologi, Institutionen för klinisk neurovetenskap, Karolinska Institutet.
- Haerens L, Vansteenkiste M, Aelterman N, van den Berghe L. 2016. Toward a systematic study of the dark side of student motivation: Antecedents and consequences of teachers' controlling behavior In *Building autonomus learners. Perspectives from*

- research and practice using self-determination theory*, ed. WC Liu, JCK Wang, RM Ryan, pp. 59-81. Singapore: Springer
- Hultell D. 2011. *Lost in transition. A study of newly graduated teachers' experiences during the initial period of employment. PhD Thesis*. Stockholm: Karolinska Institutet.
- Hultell D, Gustavsson JP. 2011. Factors affecting burnout and work engagement when entering employment. *Work* 40: 85-98
- Hultell D, Melin B, Gustavsson JP. 2013. Getting personal with teacher burnout: A longitudinal study on the development of burnout using a person-based approach. *Teaching and Teacher Education* 32: 75-86
- Jirwe M, Rudman A. 2012. Why choose a career in nursing? *Journal of Advanced Nursing* 68: 1615-23
- Kaplan H, Assor A. 2012. Enhancing autonomy-supportive I-Thou dialogue in schools: conceptualization and socio-emotional effects of an intervention program. *Social Psychology of Education* 15: 251-69
- Langer E. 2016. *The power of mindful learning*. Reading, MA: Da Capo Press.
- Lazowski RA, Hulleman CS. 2016. Motivation Interventions in Education: A Meta-Analytic Review. *Review of Educational Research* in press: 1-36
- Lochbaum M, Jean-Noel J. 2016. Perceived autonomy-support instruction and student outcomes in physical education and leisure-time: A meta-analytic review of correlates. *Ricyde Revista internacional de Ciencias del Deporte / The International Journal of Sport Science*. 12: pp
- McDonough MH, Ullrich-French S, Anderson-Butcher D, Amorose AJ, Riley A. 2013. Social Responsibility among Low-Income Youth in Physical Activity-Based Positive Youth Development Programs: Scale Development and Associations with Social Relationships. *Journal of Applied Sport Psychology* 25: 431-47
- Meng HY, Wang J, Keng C. 2016. The effectiveness of an autonomy-supportive teaching structure in physical education. *RICYDE Revista internacional de Ciencias del Deporte / The International Journal of Sport Science* 12: 1-5
- Moher D, Liberati A, Tetzlaff J, Altman DG, Group P. 2009. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *PLoS Med* 6: e1000097
- Moreno-Murcia JA, Sanchez-Latorre F. 2016. The effects of autonomy support in physical education classes. *RICYDE Revista internacional de Ciencias del Deporte / The International Journal of Sport Science* 12: 1-5
- OECD. 2015a. *Improving Schools in Sweden: An OECD Perspective*.

- OECD. 2015b. *PISA 2012 Results: Ready to Learn Students' Engagement, Drive and Self-Beliefs Volume III*.
- OECD. 2015c. *PISA 2012 Results: What Makes Schools Successful? Resources, Policies and Practices Volume IV*.
- Patall EA, Cooper H, Wynn SR. 2010. The effectiveness and relative importance of choice in the classroom. *Journal of Educational Psychology* 102: 896–915
- Pelletier LG, Rocchi M. 2016. Teachers' motivation in the classroom In *Building autonomous learners. Perspectives from research and practice using self-determination theory*, ed. WC Liu, JCK Wang, RM Ryan, pp. 107-27. Singapore: Springer
- Perlman D. 2015. Assisting Preservice Teachers Toward More Motivationally Supportive Instruction. *Journal of Teaching in Physical Education* 34: 119-30
- Reeve J. 1998. Autonomy support as an interpersonal motivating style: Is it teachable? *Contemporary Educational Psychology* 23: 312-30
- Reeve J. 2009. Why Teachers Adopt a Controlling Motivating Style Toward Students and How They Can Become More Autonomy Supportive. *Educ Psychol-US* 44: 159-75
- Reeve J. 2011. Teaching in ways that support students' autonomy In *Enhancing teaching and learning*, ed. D Mashek, E Hammer, pp. 90-103. Hoboken, NJ: Wiley-Blackwell.
- Reeve J. 2012. A self-determination theory perspective on student engagement In *Handbook of Reserach on Student Engagment*, ed. SL Christenson, pp. 149-72: Springer
- Reeve J. 2016. Autonomy-suppoprtive teaching: What it is, how to do it In *Building autonomous learners. Perspectives from research and practice using self-determination theory*, ed. WC Liu, JCK Wang, RM Ryan, pp. 129-52. Singapore: Springer
- Reeve J, Cheon SH. 2014. An intervention-based program of research on teachers' motivating styles In *Advances in motivation and achievement*, ed. S Karabenick, T Urdans, pp. 297-343. Bingley, United Kingdom: Emerald Group Publishing
- Reeve J, Cheon SH. 2016. Teachers become more autonomy supportive after they believe it is easy to do. *Psychology of Sport and Exercise* 22: 178-89
- Reeve J, Jang H, Carrell D, Jeon S, Barch J. 2004. Enhancing students' engagement by increasing teachers' autonomy support. *Motivation and Emotion* 28: 147-69
- Reeve J, Su YL. 2014. Teacher motivation In *The Oxford handbook of workplace motivation*, ed. M Gagne, pp. 349-62. New York: Oxford University Press

- Reeve J, Vansteenkiste M, Assor A, Ahmad I, Cheon SH, et al. 2014. The beliefs that underlie autonomy-supportive and controlling teaching: A multinational investigation. *Motivation and Emotion* 38: 93-110
- Rudman A, Gustavsson JP. 2012. Burnout during nursing education predicts occupational preparedness and future clinical performance: A longitudinal study. *International Journal of Nursing Studies* 49: 988-1001
- Rudman A, Gustavsson JP, Hultell D. 2014. A prospective study of nurses' intentions to leave the profession during their five first years of practice in Sweden. *International Journal of Nursing Studies* 51: 612-24
- Rudman A, Wallin L, Omne-Pontén M, Gustavsson JP. 2010. Monitoring the newly qualified nurses in Sweden: the Longitudinal Analysis of Nursing Education (LANE) study. *Human Resources for Health* 8: 1-17
- Ryan RM, Deci EL. 2000. Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist* 55: 68-78
- Skolverket. 2016. *Attityder till skolan 2015*. Stockholm: Skolverket.
- Statens beredning för medicinsk utvärdering. 2013. *Arbetsmiljöns betydelse för sömnstörningar. En systematisk litteraturöversikt. SBU-rapport nr 216*. . Stockholm: Statens beredning för medicinsk utvärdering.
- Statens beredning för medicinsk utvärdering. 2014. *Arbetsmiljöns betydelse för symptom på depression och utmattningssyndrom. En systematisk litteraturöversikt. SBU-rapport nr 223*. Stockholm: Statens beredning för medicinsk utvärdering.
- Stroet K, Opdenakker MC, Minnaert A. 2013. Effects of need supportive teaching on early adolescents' motivation and engagement: A review of the literature. *Educ Res Rev-Neth* 9: 65-87
- Su YL, Reeve J. 2011. A Meta-analysis of the Effectiveness of Intervention Programs Designed to Support Autonomy. *Educational Psychology Review* 23: 159-88
- Tessier D, Sarrazin P, Ntoumanis N. 2008. The effects of an experimental programme to support students' autonomy on the overt behaviours of physical education teachers. *European Journal of Psychology of Education* 23: 239-53
- Tessier D, Sarrazin P, Ntoumanis N. 2010. The effect of an intervention to improve newly qualified teachers' interpersonal style, students motivation and psychological need satisfaction in sport-based physical education. *Contemporary Educational Psychology* 35: 242-53
- Zee M, Koomen HMY. 2016. Teacher self-efficacy and its effects on classroom processes, student academic adjustment, and teacher well-being: A synthesis of 40 years of reserach. *Review of Educational Research* in press: 1-35



## 8 Previous reports

Petter Gustavssons forskargrupp samlas under namnet ”Motivation, kompetens och hälsa” (inkludernade de så kallade LUST- och LÄST-projekten) och är en del av sektionen för psykologi, Institutionen för Klinisk Neurovetenskap, Karolinska Institutet. Som en del av verksamheten utges rapporter sammanställda i tre olika skriftserier. Skriftserierna benämns:

- A. Forskningsrapporter
- B. Arbetsrapporter
- C. Övriga rapporter

Följande rapporter har tidigare utgivits:

- No. B 2007:1. Longitudinell Undersökning av Sjuksköterskors Tillvaro (LUST-studien): En landsomfattande longitudinell enkätstudie av sjuksköterskestudenters hälsoutveckling och karriärval under utbildningsåren och i mötet med arbetslivet: Urvalsram, kohorter och genomförande 2002-2006. Gustavsson, P., Svärdson, Å., Lagerström, M., Bruce, M., Christensson, A., Schüldt-Håård, U., & Omne-Pontén, M.
- No. B 2007:2. Lärares Tillvaro i Utbildning och Arbete: LÄST-studien. Urvalsram, kohort och genomförande 2005-2006. Gustavsson, P., Kronberg, K., Hultell, D., & Berg, L-E.
- No. B 2007:3. Exit 2006: En landsomfattande populationsbaserad studentspeglning av sjuksköterskeutbildningen. Hasson, D., Omne-Pontén, M., & Gustavsson, P.
- No. B 2007:4. Lärarutbildningen anno 2006. En nationell studentutvärdering baserad på avgångsstudenterna hösten 2006. Hultell, D., Kronberg, K., & Gustavsson, P.
- No. B 2008:1. (2:a upplagan). Den nyfärdiga sjuksköterskans arbetsvillkor. En beskrivning av anställning, verksamhet och arbetsförhållanden 1 år efter utbildningen. Rudman, A., Schüldt-Håård, U., & Gustavsson, P.
- No. C 2008:1. Hjälptill självhjälp. En lathund för SPSS. Hultell, D.
- No. B 2009:1. Den nyfärdiga sjuksköterskans arbetsvillkor. En beskrivning av anställning, verksamhet och arbetsförhållanden 1 år efter utbildningen. Rudman, A., Djordjevic, A., Frögéli, E., & Gustavsson, P.
- No. B 2009:2. Det första året i yrket – Nyexaminerade lärares erfarenheter och upplevelser av arbetsvillkor och yrkesroll. Frögéli, E., Rudman, A., Hultell, D., & Gustavsson, P.
- No. B 2009:3. Övergången mellan utbildning och yrkesliv: Lärares reflektioner kring yrkesförberedelse, introduktion och arbetssituation 2 år efter lärarexamen. Djordjevic, A., Rudman, A., & Gustavsson, P.
- No. B 2009:4. Lärarstudenters erfarenheter av stärkande utbildningsmoment och engagerande förebilder. Wännström, I., Djordjevic, A., Hultell, D., & Gustavsson, P.



- No. B 2009:5. Lärarstudenters erfarenheter av stöd och psykosocialt klimat under lärarutbildningen. Wännström, I., Hultell, D., & Gustavsson, P.
- No. B 2010:1. Manual of the Scale of work engagement and burnout (SWEBO). Hultell, D. & Gustavsson, P.
- No. B 2010:2. Lärarstudenters uppfattning om tillägnad kompetens och yrkesförberedelse. Frögéli, E., Wännström, I., & Gustavsson, P.
- No. B 2011:1. 235 röster om ”glappet”. Sjuksköterskors reflektioner om övergången mellan utbildning och yrkesliv 2 år efter examen. Djordjevic, A., Rudman, A., & Gustavsson, P.
- No. B 2011:2. Lärares erfarenheter av mobbing under de tre första åren i arbetet. Hultell, D.
- No. A 2012:1. A note on the assessment of performance-based self-esteem. Hallsten, L.
- No. A2013:1. A prospective study of changes in burnout and work engagement for beginning teachers. Hultell D, & Gustavsson P.
- No. B 2013:1. Utbildningens förberedelse av sjuksköterskestudenter för användning av forskningsresultat och tillämpning av evidensbaserad vård – En jämförelse mellan lärosäten. Nilsson-Kajermo, K., Rudman, A., Wallin, L., & Gustavsson, P.
- No. B 2013:2. Lärares karriärvägar och hälsoutveckling de första åren efter utbildning. Enkät använd vid LÄST-projektets datainsamling tre år efter examen (2010). Hultell D, Rudman A, & Gustavsson P.
- No. B 2013:3. Sjuksköterskors karriärvägar och hälsoutveckling de första åren efter utbildning. Enkät använd vid LUST-projektets datainsamling för X2004-kohorten fem år efter examen (2010). Rudman A, Hultell D, & Gustavsson P.
- No. B 2013:4. Sjuksköterskors karriärvägar och hälsoutveckling de första åren efter utbildning. Enkät använd vid LUST-projektets datainsamling för X2006-kohorten tre år efter examen (2010). Rudman A, Hultell D, & Gustavsson P.
- No. B 2013:5. Lärares och sjuksköterskors hälsoutveckling och karriärvägar de första åren efter utbildning: Rapport till AFA Försäkring. Gustavsson P, Hultell D, & Rudman A.
- No. B 2014:1. Orsaker till ökande problem med stress under sjuksköterskeutbildningen – En longitudinell analys. Gustavsson P, Jirwe M, Frögéli E, & Rudman A.
- No. B 2015:1. Nya sjuksköterskors exponering för höga arbetskrav, låg kontroll och lågt stöd under sina första tre år i yrkeslivet. Gustavsson P, Frögéli E, Dahlgren A, Lövgren M, & Rudman A.
- No. A 2015:1. The effects of early career burnout on long-term sickness absenteeism. Hultell D, & Gustavsson P.
- No. A 2015:2. Sickness absence in sequential cohorts of new graduate nurses in Sweden between 2001 and 2006. Lövgren M, Gustavsson P, & Rudman A.

- No. A 2015:3. A longitudinal study into the effect of induction on the development of burnout in beginning teachers. Hultell D, & Gustavsson P.
- No. A 2015:4. Yes we can! Measuring newly graduated teachers' professional self-efficacy. Frögéli E, Hultell D, & Gustavsson P.
- No. B 2016:1. Mindset interventions in academic settings. A review. Miller E, Rudman A, Högman N, & Gustavsson P.
- No. B 2016:2. Mäta mindset: Utprovning av den svenska versionen av Theory of Intelligence measure. Högman N, Gustavsson P, & Rudman A.
- No. B 2016:3. Autonomy-supportive interventions in schools. A review. Gustavsson P, Jirwe M, Aurell J, Miller E, & Rudman A.





**Karolinska  
Institutet**