



Teacher Expectations and Self-Determination Theory: Considering Convergence and Divergence of Theories

Lisette Hornstra¹ · Kim Stroet² · Christine Rubie-Davies³ · Annaline Flint³

Accepted: 7 June 2023 / Published online: 13 July 2023
© The Author(s) 2023

Abstract

Various theories from the field of educational psychology, including high expectation theory (HET) and self-determination theory (SDT), focus on the classroom conditions which facilitate students' motivation, learning, and well-being. In the current paper, we aimed to breach the theoretical division between HET and SDT through a synthesis of both theories. We identified multiple areas of convergence and complementarity. The teaching practices that are theorized to support students' motivation, learning, and well-being put forward by both HET and SDT show a high degree of conceptual overlap. Moreover, findings from both research fields suggest a gap between theory and practice: although the teaching principles put forward by both theories are believed to be effective for all students, not all teachers optimally apply these principles in their teaching or apply them equally for all classes or all students. Both theories acknowledge that teacher beliefs and contextual factors may account for this gap between theory and practice. In the paper, we put forward an integrative model to show how the two theories converge and complement each other. The integration of the two theories offers a way forward in terms of understanding and applying these two theoretical stances to the classroom.

Keywords High expectation theory · Teacher expectations · Self-determination theory · Need-supportive teaching · Motivation

Classrooms are complex social contexts and teachers are the focal point of many daily interactions. For example, teachers ask approximately 300–400 questions of

This article is part of Topical Collection on Hybridizing Motivational Strains.

✉ Lisette Hornstra
T.E.Hornstra@uu.nl

¹ Department of Education, Utrecht University, Postal box 80140, 3508 TC Utrecht, The Netherlands

² Institute of Education and Child Studies, Leiden University, Leiden, The Netherlands

³ Faculty of Education and Social Work, University of Auckland, Auckland, New Zealand

students every day (Vogler, 2008). In classrooms, teachers are responsible for their students' motivation, learning, and well-being. Various theories from the field of educational psychology focus on the classroom conditions which facilitate these student outcomes. Two theories that particularly fit that frame, both of which describe teaching behaviors supportive of those outcomes in students, are high expectation theory (HET; Rubie-Davies, 2015) and self-determination theory (SDT; Deci & Ryan, 1985). In the present paper, we focus on both theoretical perspectives and associated research to gain an understanding of how HET complements SDT as well as how it may be reinforced by SDT.

HET focuses on the specific pedagogical behaviors that teachers can implement in classrooms to communicate high expectations to students and thereby create a supportive learning environment conducive to students' motivation and engagement, learning, and well-being (Rubie-Davies, 2015). Although developed separately, the three key principles emphasized in HET have a close alignment with the two-factor theory proposed by Harris and Rosenthal (1985). HET proposed that three key principles (using mixed or flexible forms of grouping coupled with high-level learning opportunities, creating a warm socioemotional climate, and promoting goal setting for students accompanied by clear teacher feedback) are elemental in the practices of high expectation teachers. These principles, when implemented, create high-level learning opportunities for students within a supportive and warm classroom climate. Harris and Rosenthal proposed that the two teacher expectation behaviors that made the most difference to student learning could be categorized as effort (the learning opportunities given to students) and affect (the teacher warmth portrayed to students).

SDT can be considered a macro-theory of human motivation, development, and well-being and posits that a need for growth and fulfillment drives people, and this motivational drive is underpinned by three inherent and universal psychological needs: competence, relatedness, and autonomy (Ryan & Deci, 2000a, 2020). An important feature of SDT is the role of social contexts and interpersonal interactions in facilitating intrinsic motivation. Regarding education, SDT describes how teaching practices that support students' psychological needs foster students' intrinsic motivation for learning, engagement (Stroet et al., 2013), and their overall well-being (Ryan & Deci, 2000a). Despite their shared focus on the teacher practices that facilitate optimal student outcomes, thus far, no attempts have been made to integrate HET and SDT theories, resulting in two very distinct and unconnected strands of research.

In this paper, we have chosen to focus on five of the seven questions that underpin the manuscripts in this special issue:

- 1) What happens when you cross-fertilize your chosen models/theories? What are the points of convergence and divergence that exist, and the creative synthesis that results?
- 2) What are some complementary gaps that might be addressed through the integrative synthesis of established theories?

- 3) How does the learning environment interface with individual differences in your integrative model?
- 4) What does your integrative model have to say about construct validity and predictive validity (i.e. overlap in constructs, how constructs meaningfully predict learning outcomes)?
- 5) What are the boundaries between theoretical models? When is it helpful to integrate or when is it better to stay within one model?

In this paper, we hope to breach the theoretical division between HET and SDT through the synthesis of both theories. In doing so, we will mainly focus on the *teaching practices* that are put forward by both theories as it is at this level that the two theories mostly connect and overlap. In addition, particularly when answering Question 5 about boundaries between the two models, we will reflect on possible integration at the level of theoretical underpinnings. We will first describe both theories separately after which we investigate the convergence and divergence between both theories, as well as identifying the gaps that can be filled by integrating the theories. We will discuss how the constructs from both theoretical stances overlap and are predictive of student outcomes. Finally, we discuss the boundaries between the two theoretical models and when integration would be more useful than separation. Integration of these theories is useful when considering the contribution of teachers in creating the most optimal instructional and socioemotional conditions for students in classrooms. This can help to gain a better understanding of the complex role of teachers in supporting students' motivation, learning, and well-being.

High Expectation Theory

HET is rooted in a long tradition of research on teacher expectations (Rubie-Davies, et al., 2015). This tradition started with the well-known study by Rosenthal and Jacobson (1968) "Pygmalion in the Classroom." In this study, participating teachers were told that some of their students, who were actually randomly selected, would thrive academically. Over time, these students indeed made more intellectual gains than other students, suggesting that teacher expectations affected the students' intellectual outcomes. Although the study received many criticisms and critiques, mostly related to the methodology (e.g., Thorndike, 1968), this study was ground-breaking and has been an important starting point for further research on teacher expectations (Timmermans et al., 2018). Teacher expectations are assumed to affect student outcomes through two possible mechanisms: self-fulfilling prophecy effects (Merton, 1957) or self-maintaining expectations, also referred to as "sustaining effects" (Babad et al., 1982; Brophy, 1983; Cooper & Good, 1983; Good & Brophy, 2003). Self-fulfilling prophecies occur when a false conception of a situation (e.g., a teacher expectation that is lower or higher than current achievement) evokes a new behavior that makes the original false conception come true (Merton, 1957). Hence, an inaccurate teacher expectation may elicit teaching behaviors that can cause a student to act in accordance with that expectation. A meta-analysis by Hattie (2009)

indicated that such self-fulfilling prophecy effects do occur in education, and that these effects are medium-sized ($d=0.43$). In the case of sustaining effects, expectations are based upon “real” differences. When teachers act in accordance with these expectations, they prevent changes in students’ behaviors. In this way, the expectations evoke consistency in students’ learning and performance (Babad, 1993; Babad et al., 1982; Cooper & Good, 1983; Salomon, 1981). Both mechanisms assume that teacher expectations affect student outcomes through the behaviors that teachers display (e.g., Brophy, 1983; Harris & Rosenthal, 1985; Wang et al., 2018). However, all the earlier research related to teacher expectations, some of which is cited above, focused on teacher interactions with individual students. That is, the conception was that within any classroom, teachers would have high expectations for some students and low for others.

Rubie-Davies (2006, 2007, 2008; Rubie-Davies et al., 2007) proposed, instead, that there would be some teachers who would have high expectations for all students (relative to achievement) and others who would have low. She further proffered that it was probable that the pedagogical beliefs of these types of teachers would differ resulting in differential interactions with students in the respective classrooms and differences in the opportunities to learn provided for students. In other words, the teacher beliefs would moderate the expectation effects. For example, high expectation teachers are not influenced by societal stereotypes. They believe that *all* students can achieve at high levels given a supportive classroom environment and that *all* students will make large gains when in their classrooms. Hence, their expectations are not influenced by student background characteristics to the same degree as they might be in other classrooms. This belief, therefore, moderates the likely expectation effects.

Rubie-Davies’ research, and particularly her large experimental study (McDonald et al., 2014; Rubie-Davies, 2015; Rubie-Davies & Rosenthal, 2016; Rubie-Davies et al., 2015) created a new direction for work in the field. The focus had been (and often still is, see Wang et al., 2018 for a recent review) on student characteristics and how they resulted in teachers having high or low expectations for students, and, in turn, how that was reflected in their interactions with students. Instead, Rubie-Davies asked what it was about teachers that meant that some had high expectations for all students whereas others had low. She argued that by conducting analyses across all teachers, as in the traditional analyses, the likely effects of high and low expectation teachers would counterbalance each other and not become evident. By separating out analyses by teacher type, Rubie-Davies (2007) was able to show that approximately one-quarter of teachers could be identified as high expectation teachers and one-sixth low expectation teachers, and the differences in student academic outcomes were startling. In high expectation classrooms, students showed, on average, large effects size gains ($d=1.05$) in academic achievement over one academic year, whereas in low expectation classes, the gains were very small ($d=0.05$). In addition, the self-beliefs of students about their capability in reading and mathematics increased a little over one academic year if they were in classes of high expectation teachers but declined significantly if they were with a low expectation teacher (Rubie-Davies, 2006). Observations in classrooms (Rubie-Davies, 2007) and interviews with teachers (Rubie-Davies, 2008; Rubie-Davies & Peterson, 2011) led

Rubie-Davies to identify the pedagogical beliefs and practices that differed between high and low expectation teachers and most likely led to the stark differences in achievement of students in their classes as well as the differences in self-beliefs.

HET describes three fundamental principles that teachers engage in to communicate high expectations to all students and thereby support and promote student learning and well-being: (1) mixed ability or flexible grouping (coupled with high-level learning opportunities), (2) class climate, and (3) goal setting (Rubie-Davies, 2015). These three key principles are interconnected as will be outlined below.

Mixed ability or flexible grouping has various components that relate to the provision of high-level learning opportunities for all students. These learning opportunities result in accelerated academic progress for students and, also, in increases in student self-beliefs and motivation. High expectation teachers provide careful explanations of new concepts, make links to prior knowledge, and question students to ensure that they understand the new idea(s), before moving on to additional new information (Rubie-Davies, 2007). Further, high expectation teachers differ from other teachers in that they ask high-level questions of all students. This ensures that all students are given the opportunity to think at high levels and open, cognitively engaging questions are not just reserved for high achievers (Arabsolghar & Elkins, 2001; Zohar et al., 2001). Moreover, students work together in mixed ability or flexible forms of grouping. Although students may spend some time on individual activities, there is a lot of collaboration in high expectation classrooms. This means that all students have the opportunity to work together, resulting in high levels of cooperation and peer modeling, both of which have been associated with accelerated achievement (Fung, et al., 2003; Gillies, 2016). Further, students are frequently allowed to choose the learning activities that they wish to undertake. This means that there are not specific activities designated for some students and different activities assigned to others. Although high expectation teachers might provide skill-based workshops for students, those opting for the workshops and those assigned by the teacher change daily. Hence, ability is not made salient in these classrooms. The focus is on mastery of skills rather than performance in relation to others.

There is also a strong emphasis on students collaborating and supporting each other. High expectation teachers achieve this through creating a warm class climate in their classrooms. They form strong, positive relationships with all their students (Rubie-Davies & Peterson, 2011) and, therefore, avoid the perception that some students are favored over others. Babad (1998) has described preferential affect (emotional favoritism) as the major conduit for teacher expectations and a divided classroom. Behavior management in high expectation classrooms is largely positive and preventive, but misbehavior is minimal because all students are motivated and positive about their learning (Rubie-Davies, 2007). Further, in high expectation classrooms, the students are expected to support each other, not just when they collaborate, but on all learning activities. Students are rewarded for helping each other and working together rather than for out-performing others. Because students are not consigned to working only in particular ability groups with specific peers, they form friendships across the classroom. They are also given a wide range of opportunities to work with all members of the class at various times throughout the academic year, with seating arrangements often changing. This provides a wide range

of opportunities for all students to work with all their classroom peers. Hence, high expectation classrooms become strong, supportive, engaging, and engaged communities of learning (Rubie-Davies, 2015).

The final key principle of high expectation teaching is goal setting. All students in high expectation classrooms have clear learning goals. Students understand what they are learning, the next skills that they need to master, and how to achieve their goals. How the students know that they have been successful (the success criteria) is clear (Clarke et al., 2003). This leads all students to achieve success and make progress, no matter their achievement level. In turn, students in high expectation classrooms develop high levels of self-belief because they are aware that they are succeeding in their mastery of skills. In addition, all students are engaged in exciting, challenging learning opportunities, which they often self-select, meaning that they are motivated and engaged. There are not some students completing low-level, mundane activities and others completing stimulating, engaging activities. Finally, high expectation teachers monitor student progress closely and give specific, frequent, and targeted feedback to students in relation to their goals and the progress that they are making toward meeting their goals (Rubie-Davies, 2015). Students are very clear about what they need to do and learn next.

Self-determination Theory

Contrary to HET, which focuses on the specific pedagogical behaviors that teachers can implement in classrooms, SDT (Deci & Ryan, 1985; Ryan & Deci, 2020a, b) is considered a macro-theory of motivation and well-being. Within SDT, it is assumed that curiosity about the environment and interest in learning and skill development are inherent in human nature. When people can act in accordance with their natural tendencies, they will be motivated to learn and elaborate their personal interests by pursuing those goals that they (have come to) personally value. Because people are so deeply connected with their social environments, teachers play an important role in fostering students' curiosity and interest but may also undermine these motivational processes.

Although SDT is a general human motivation theory, many studies have been conducted in the field of education. SDT comprises six mini theories. One of these mini-theories is Basic Psychological Needs Theory (BPNT) which describes the three basic psychological needs, their relations to motivation and well-being, and the conditions that affect need-based experiences (Vansteenkiste et al., 2020). In this paper, our focus is on this particular mini-theory as it describes how social contexts affect individual outcomes.

The three basic needs described within BPNT are the needs for autonomy, competence, and relatedness. First, the need for autonomy stems from the inherent desire people have to be causal agents and to experience volition. Second, the need for competence is closely related to people's active tendency toward psychological growth, as it refers to the need to feel effective, while at the same time exercising and expressing one's capacities. Third, the need for relatedness concerns the desire to form and maintain strong and stable interpersonal relationships,

to connect with and be accepted by others, and to belong (Baumeister & Leary, 1995; Bowlby, 1979; Harlow, 1958; Ryan, 1995).

Educational literature generally agrees upon three dimensions of need-supportive teaching that complement each other in their effects on students' need satisfaction (Connell & Wellborn, 1991). The first positive dimension is autonomy support. Teaching is autonomy-supportive when it provides students with opportunities to express their own feelings, thoughts, and perspectives on the tasks at hand, whether positive or negative. Teachers can provide autonomy support by allowing student input, teaching in students' preferred ways, by offering choices, or when choice is constrained, by fostering relevance through meaningfully connecting the learning activity to a goal that is of personal value to the students (Ahmadi et al., 2022; Assor & Kaplan, 2002; Belmont et al., 1992; Stroet et al., 2013; Vansteenkiste et al., 2018). Another element of autonomy support is cognitive autonomy support, which refers to giving students open questions that leave them with freedom in their thinking (Stefanou et al., 2004).

The second dimension of need-supportive teaching is structure. Structure is theorized to support students' need to feel competent. It refers to information, support, and guidance that teachers provide students with concerning how to effectively achieve desired outcomes (Skinner & Belmont, 1993; Skinner et al., 2008). Structure is opposed to chaos that can cause students to feel unsure and incompetent. Skinner et al. (1998) described that *contingency* is an important feature of structure. This means that teachers provide materials or feedback that are contingent on the actions and abilities of the student. More specifically, teachers can provide structure by providing optimal challenge tailored to students' potential, responding consistently and contingently, by communicating clear and consistent guidelines, by being available when students have questions, and by offering encouragement. Further, provision of structure entails the fostering of students' views that success in the tasks learned in class depends mostly on internal controllable factors (i.e., emphasizing effort) rather than inborn talent, and the provision of constructive, non-comparative feedback. Finally, an important component of structure is provision of guidance through specific feedback and giving step-by-step directions, thereby adjusting to students' needs (Ahmadi et al., 2022; Jang et al., 2010; Skinner, 1998; Skinner & Belmont, 1993; Stroet et al., 2013). Structure also entails communication of positive expectations (Stroet et al., 2013). This differs however from how expectations are defined in HET. In HET, having high expectations of a student is expected to translate into a range of teaching practices (Rubie-Davies, 2015). Communicating positive expectations to a student (SDT) is much more specific and always relates to a specific task or set of tasks. Accordingly, a teacher who communicates positive expectations will expect a student to be capable of completing (either with or without help) a specific task (or set of tasks).

The third dimension of need-supportive teaching is involvement. Involvement contributes to satisfaction of the students' need for relatedness. Teachers can express their involvement by showing unconditional positive regard, demonstrating interest in students' progress, welfare, and feelings, by encouraging empathy and pro-social behavior in the class, and by being available to all students in class. Further, teacher

involvement includes showing commitment to students' learning (Ahmadi et al., 2022; Baumeister & Leary, 1995; Stroet et al., 2013).

Studies in SDT (with a focus on BPNT in this paper; Haerens et al., 2015; Ryan & Deci, 2000b, 2020; Vansteenkiste & Ryan, 2013; Vansteenkiste et al., 2020) state that a lack of need support does not necessarily equate with active thwarting of students' basic needs. Instead of being considered the opposite ends of a single dimension, need support and need thwarting are increasingly recognized as two independent dimensions in SDT (Vansteenkiste et al., 2020). Need thwarting involves an active threat to the psychological needs rather than just the absence of need support. When students' needs are actively thwarted, this can cause need frustration and subsequently lead to unique negative outcomes in students such as amotivation or dropout, which cannot be explained just by a lack of need support. The three dimensions of need thwarting are controlling teaching, chaos, and disaffection or rejection. Controlling teaching is the opposite of autonomy-supportive teaching and occurs when teachers use pressuring or controlling language, ignore their students' perspectives, and pressure students to adopt the teachers' perspective, and feel, think, or act in specific ways (Ahmadi et al., 2022; Reeve, 2009). Students' need for competence is thwarted when students experience disorganization or chaos. This occurs when teachers are unclear concerning the classroom rules, their goals for their lessons, and provide no guidelines as to how to achieve the goals (Van den Berghe et al., 2013). Students' need for competence is also thwarted when teachers set the same task for students regardless of their ability level, publicly criticize students, or base their criticism on fixed qualities of the student (i.e., students' abilities), or base criticism on peer comparisons (i.e., telling students they are not doing as well as others; Ahmadi et al., 2022). Involvement contrasts with the dimension of disaffection or rejection which can thwart students' need for relatedness. Disaffection or rejection can be expressed by ignoring students, or through emotionally cold or unfriendly teaching behaviors (Ahmadi et al., 2022; Van den Berghe et al., 2013).

Thus far, the vast majority of educational research on SDT has focused on between-teacher differences in need-support, and not so much on differences between individual students (see, e.g., Chatzisarantis et al., 2019 and Domen et al., 2020, for exceptions). In that sense, research on SDT is more like research on HET than like the traditional research on teacher expectations. Different from HET, however, in the theoretical premises on which SDT is built, the primary focus is on individuals and their needs. Even when applied to the school context, not much reference is made to the level of the group or school class. Accordingly, topics such as ability grouping have received relatively little attention in SDT.

Convergence and Divergence Between SDT and HET

To investigate the convergence and divergence between the teaching practices that have been described in relation to HET and SDT (Questions 1–3), we have put forward an integrated model which combines insights from HET and SDT (see Fig. 1). In the sections below, we discuss the constructs and relations that are depicted in the model. First, we will focus on a comparison of the teaching practices that are

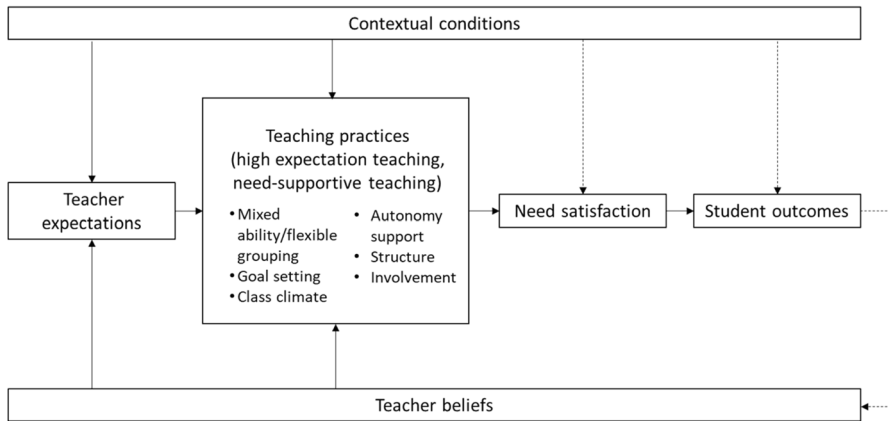


Fig. 1 Integrated model of self-determination theory and high expectation theory. Note: the dashed arrows represent relations that are beyond the scope of the present paper

theorized to support students' motivation, learning, and well-being put forward by both HET and SDT, and how these affect student outcomes. In this section, we distinguish between interactions with individual students and practices at the level of the school class. Second, even though there is ample empirical support for the practices put forward by both theories (e.g., Rubie-Davies, 2015; Stroet et al., 2013), there are indications that many teachers do not optimally apply these principles in their teaching practices (e.g., Reeve et al., 2014; Rubie-Davies, 2007). We will focus on the *contextual conditions* and *teacher beliefs* that are put forward by both theories as explanations for this gap between theory and practice.

Teaching Practices: Need-Supportive Teaching and High Expectation Theory

In the middle of Fig. 1, the teaching practices are described which are believed to promote adaptive student outcomes according to both theories. Broadly speaking, the areas of mixed ability grouping, class climate, and goal setting in HET theory align with those of autonomy support, structure, and involvement in SDT theory although some specifics are more highly emphasized in one theory than the other, and some aspects of one theory cut across the theoretical categorizations of the other.

The first HET principle, mixed ability grouping, is based on the idea that the salience of ability is decreased when students are working in groups with a variety of peers; students are enabled to feel competent. The focus on mastery of skills and student progress rather than performance comparisons, as ascribed by HET, also aligns well with the competence factor in SDT. This focus on mastery of skills in HET is designed to encourage students to realize that academic growth is reliant on internal, controllable factors, and that the non-comparative feedback that they receive from teachers (categorized under goal setting in HET) provides clarity in relation to the progress that the students have made toward achieving their goals and what their

next focus needs to be. In SDT, the focus is more on the level of teacher interactions with individual students. Within these interactions, the importance of feedback being informational and encouraging rather than being evaluative is emphasized (Ahmadi et al., 2022; Ryan & Deci, 2017). Such feedback is argued to foster feelings of competence and students' views that success in class depends mostly on internal controllable factors rather than inborn talent. Hence, both theories emphasize the need for students to feel competent and in control of their own learning in order to foster student academic and psychological growth, and both posit that teaching practices which de-emphasize evaluation can help to achieve this. This first HET principle complements SDT as it adds to our understanding of specific teaching practices that are conducive to students' motivation, learning, and well-being at the level of the school class. Based on current SDT research, little can be said about whether ability grouping is a good idea or not, or under which conditions it would be a good idea. Given that ability grouping is widespread in current education, this may be considered a gap in SDT research.

The second HET principle, class climate, is congruent with relatedness in SDT. The need for supportive and caring teacher-student relationships is emphasized in both theories, for students to feel classroom belongingness. Both HET and SDT also emphasize the importance of developing a class climate where peer-peer relationships are strong. Students are engaged in collaborative activities and are expected to support each other. Because students often complete tasks collaboratively, strong peer modeling is a further feature of HET classrooms. This second HET principle may be reinforced by SDT research confirming the importance of support for students' need for relatedness (see, e.g., Stroet et al., 2013).

Third, the HET component of goal setting which also includes students identifying their own learning process as well as teacher monitoring and feedback closely aligns with SDT's conceptualization of autonomy. Autonomy can be provided through goal setting. In HET, autonomy relates to the choices that students are given in the types of learning activities in which they engage, whereas in SDT, it also refers to students having the opportunity to express their views about specific tasks. In both HET and SDT, the proposition is that when students are given some autonomy in their learning, they will then be more engaged in their activities and more motivated to reach their goals. In addition, the notion in HET that high-level questions should be asked of all students relates to the idea in SDT that all students should be provided with cognitive autonomy. Teachers can do so via questions and assignments that are open-ended in the sense that they allow multiple ways of finding solutions, thereby stimulating creative thinking (Stefanou et al., 2004). This aligns closely with the notion in HET that all students should be given open, cognitively engaging questions so that they can think at high levels. Moreover, goal setting as proposed by HET, which includes setting goals that challenge students and providing targeted feedback to allow students to meet these goals, also seems congruent with SDT's notion of structure as contingent support (Skinner et al., 1998). HET, however, does not encompass classroom clarity in the sense of clear rules and expectations as is proposed in SDT's notion of structure, although an earlier paper (Rubie-Davies, 2007) did refer to the ways in which high expectation teachers structured their introduction of new concepts and used preventive management

techniques in order to ensure classrooms ran effectively. This third HET principle (goal setting) complements SDT research on cognitive autonomy support, while at the same time being reinforced by it. Combining both bodies of research may deepen understanding of how students' cognitive engagement and creativity could be fostered.

Overall, SDT can also offer a framework from which the expected positive effects of HET on students can be understood theoretically. That is, SDT states that teaching practices ("need *support*") affect student outcomes through the psychological experience of need *satisfaction* by students, which in turn, promotes their effective functioning and well-being. Likewise, need satisfaction may also explain why the teaching practices associated with HET promote positive student outcomes. That is, these practices may be effective because they help to satisfy students' needs and help students to feel autonomous, competent, and related to others. Hence, the theoretical integration of both perspectives provides fruitful hypotheses for future research. For example, as explained above, mixed ability grouping (HET) is expected to satisfy students' need for competence (SDT) and thereby promote students' motivation, learning, and well-being. Empirical work could investigate these hypothesized mediational pathways. As such, Fig. 1 includes need satisfaction as a mediating factor between the teaching practices put forward by both theories and student outcomes.

Contextual Conditions and Teacher Beliefs

HET-teaching and need-supportive teaching do not take place in a vacuum but are affected by contextual conditions and teacher beliefs. Even though the teaching principles put forward by HET and SDT are believed to be universally effective, not all teachers apply these principles in their everyday practices. Contextual conditions, referring, for example, to school-level factors, as well as the pedagogical beliefs and beliefs about their students that teachers endorse, may account for this gap between theory and practice.

Contextual Conditions

In the traditional teacher expectation research related to expectations for individual students, various contextual conditions, such as school type and school composition, have been found to be related to teacher expectations (for a review, see Wang et al., 2018). That is, some studies have suggested that teachers' expectations within schools come to be aligned as a result of the school culture. In a small body of SDT studies, contextual conditions have been found to be related to need-supportive teaching as well. Below we describe the research that is available from both perspectives. Because there is much overlap in terms of teaching practices between both theories, we believe that it makes sense to expect overlap in terms of relevant contextual conditions as well.

Research by Brault et al. (2014), for example, showed that teacher expectations were lower in ethnically diverse schools. These effects of school composition can be triggered by the school culture. Teachers can have shared beliefs about the “teachability” of the school population (Demanet & Van Houtte, 2012) and the teachability (which Demanet and Van Houtte used as their teacher expectation indicator) is typically considered to be lower when the school population consists of a high percentage of minority students. Hence, schools can have a common culture of teacher expectations, which may impact individual teachers’ expectations and subsequent expressions thereof. This may be a reciprocal process as teacher beliefs about the common culture may influence their expectations as well. In a recent study (Van den Broeck et al., 2020) about the relations between school-level teacher expectations and students’ aspirations, the authors found that in low SES schools, when teacher expectations across the school were high, the aspirations of the students were greater than if they were in low SES schools with teachers who had low expectations for their futures. Similarly, Rubie-Davies (2015) has reported that in several of her studies, although the evidence is still anecdotal at this stage, she has noticed a pattern whereby high expectation teachers tend to be clustered in some schools and low expectation teachers in other schools. Hence, if common culture in schools affects teachers’ expectations of their students as these studies suggest, this is likely to affect their teaching practices and student outcomes given the large body of work which empirically supports these relations (e.g., see Rubie-Davies, 2015 for an overview).

Similarly, contextual conditions have also been found to be related to need-supportive teaching in SDT research. Reeve (2009) and Pelletier et al. (2002) discussed so-called “pressures from above” which are school-level contextual conditions that trigger teachers to desist from providing autonomy support. Reeve (2009) argued that pressures from above can include feeling pressured to have students perform up to a certain standard and inherent power differences in teacher-student relationships. One study found that when teachers perceived that their own need for autonomy was thwarted, they were less autonomous in their teaching (Pelletier & Sharp, 2009). Further, in a multiple case study comparing schools with traditional and socio-constructivist educational approaches, Stroet et al. (2015) found that the educational approach of the school affected how teachers supported students’ needs. In schools using traditional compared with socio-constructivist approaches, teachers supported their students’ needs, but in different ways. For example, in socio-constructivist schools, autonomy support was often provided via scaffolding in one-on-one interactions, whereas, in the traditional school, more open, cognitively engaging questions were discussed during whole class instruction.

Teacher Beliefs

Also, teacher beliefs have been found to play an important role when it comes to explaining why teachers adopt certain teaching practices. Teacher beliefs include beliefs, for example, about the best pedagogy to use with students, political beliefs, personal values, stereotyping, and so on. These beliefs can feed into the formation of expectations, but they can also affect teaching practices directly. Teachers’

pedagogical beliefs can play an important role when it comes to HET teaching as well as need-supportive teaching. That is, because of their teaching beliefs and resistance to change, teachers have not always been willing to adopt high expectation practices (McDonald et al., 2014). Similarly, when teachers believe that controlling teaching practices, such as being directive, are more effective than autonomy-supportive teaching (Hornstra et al., 2015; Reeve, 2009) or when they feel that certain teaching practices are not feasible (Reeve et al., 2014), they may refrain from adopting need-supportive teaching practices. Also, teacher beliefs about students play a crucial role. This can play a role at the classroom level as is clearly illustrated by findings of HET that teachers who have high expectations of all their students are not influenced by student characteristics (Rubie-Davies, 2015). That is, they believe that all their students can make large learning gains, regardless of background factors, and implement emotional and learning support that ensures that their expectations are realized.

Teacher beliefs about *individual students*, particularly when these affect their expectations of each student, can play an important role in explaining why teachers differentiate their teaching practices toward different students and do not provide all students with optimal levels of support. The traditional teacher expectation research was aimed at examining how student differences, for example in differences in socio-economic or ethnic background, influenced teachers' expectations and how these expectations, in turn, were related to differential teaching. That is, Weinstein conducted many studies (e.g., Weinstein & McKown, 1998; Weinstein, 1993, 2002) related to what she termed high and low differentiating teachers (those who either treat high and low expectation students very differently versus those who treat all students similarly). Babad (e.g., Babad, 2009; Babad et al., 1982, 1989) explored the idea of high- and no-bias teachers (those who were easily influenced by stereotypical information versus those who were not). These studies have suggested that especially high-differentiating teachers or high-bias teachers differentiate their teaching according to their expectations. HET, however, has moved beyond the idea that student characteristics influence teachers' expectations to the conception that expectations can be high for all students, regardless of student background.

Studies within SDT, on the other hand, have only recently started to focus on within-teacher variation in need support. That is, although the teaching practices put forward by SDT are believed to be universally effective for all students (Vansteenkiste et al., 2020), recent empirical work has suggested that many teachers strongly vary in their teaching behaviors toward different students, providing some students with higher levels of need support than other students (Domen et al., 2020). This indicates that need-supportive teaching should not only be considered a "teaching style" which varies between teachers but can also be considered a feature of dyadic relations between teachers and individual students with variability within teachers. Thus far, SDT has not focused very strongly on within-teacher differences in teaching practices (but see, Chatzisarantis et al., 2019; Domen et al., 2020, as exceptions). It is important to note here that SDT does not suggest a "one-size-fits-all-approach" when it comes to need support. Instead, need support can and should be tailored to the individual student (Vansteenkiste et al., 2020) and, as such, be contingent to students' needs, abilities, and actions (Skinner et al., 1998).

Nevertheless, differences in the *levels* to which students' needs are supported will likely result in differences in the extent to which students' basic needs are fulfilled. Hence, to understand the origins of within-teacher differences in need support, and, more importantly, to be able to address those, it is important to get a grasp on the underlying teacher beliefs that drive practice. Traditional teacher expectation research may provide useful insights to SDT concerning this matter, as findings from teacher expectation research suggest that based on their expectations (high for some students and low for others), teachers differentiate in their teaching practices toward different students through differences in teacher–student interaction patterns and differences in the learning opportunities provided for students (e.g., Brophy, 1983; Rosenthal, 1994; Wang et al., 2018). Specifically, this line of research suggested that teacher beliefs about individual students can affect teachers' expectations of students and, in turn, affect teaching practices. For example, teachers who have a stronger prejudice against certain stigmatized groups, such as minority or low SES students, tend to have lower expectations of students belonging to these groups, and subsequently differentiate their teaching practices based on these beliefs (Denessen et al., 2020). Indeed, one recent empirical study confirmed the relationship between teacher expectations and teachers' need support as perceived by students (Hornstra et al., 2018). The findings of this study indicated that students for whom the teachers had reported higher expectations, perceived their teacher to be more supportive of their needs for autonomy, competence, and relatedness.

Similarly, Rubie-Davies in her model of teacher expectations (2015) has proposed that although the strongest effects are likely to be from the teacher to student outcomes (both academic and psychosocial), nevertheless, the model acknowledges that student attitudes, behaviors, and academic results can feed back into the formation of teachers' expectations. Although the effects of students on teachers' expectations have been infrequently studied, some support for this conception is borne out by the work of Marchand and Skinner (2007). In their study, they showed reciprocal effects from teachers to students as students transitioned from elementary to middle school. Student perceptions of relatedness to teachers resulted in increases in their help-seeking, whereas when students believed that they lacked competence, concealment of any difficulties resulted. In turn, teacher support for students increased or declined depending on students' help-seeking behaviors. Students who actively sought teacher help were rewarded with greater support from their teachers compared with students who attempted to conceal their difficulties. The authors described this as a form of Matthew effect whereby the students who were motivationally rich became richer because they sought help, whereas those who tried to conceal their difficulties (the motivationally poor) became poorer. This study provides a further strong connection between HET and SDT in terms of how teacher beliefs might be formed (albeit hypothetical).

Hence, based on their expectations, teachers may express different levels of need support to students, thereby affecting students' learning, motivation, and well-being. These processes may either be self-fulfilling prophecy effects in the case of false expectations or sustaining expectation effects when expectations correspond with initial achievement. Aligning with the work by Rubie-Davies, differences between teachers are likely to moderate these expectation effects, with high expectation

teachers providing high levels of support to all students. Hence, to understand how teachers may move away from this kind of differentiation between students from different groups, the insights from HET seem particularly useful. These insights about what causes teachers to differentiate and what makes some teachers differentiate more strongly than others may help researchers and teachers understand the underlying causes of differences in need support. Next to stressing the general importance of taking into consideration teacher beliefs and contextual conditions, this line of research may help grasp how in practice, integration of both theories might be particularly valuable. An example to make this point clear comes from the Dutch context, where fixed ability grouping is used in most primary schools (see Keuning et al., 2021). Given this approach, teachers do not always feel free to switch to mixed ability or flexible grouping as proposed in HET. Under this contextual condition, a useful finding from SDT-research is that need-supportive instruction can dampen some of the possible negative effects of having fixed ability groups (see, e.g., Baten et al., 2020). Moreover, the focus in HET on mastery rather than performance goals and the promotion of high expectations for all students may also help to lessen the pernicious effects on student self-belief of being consigned to lower ability groups.

Integrating HET and SDT

Both HET and SDT focus on the teaching practices which facilitate students' learning, motivation, and well-being. Despite this shared focus, this paper is the first to attempt to integrate these theories and to investigate what happens when you cross-fertilize these theories, how they converge and diverge, and how they may complement each other. Based on the integration of these theories, we will discuss how HET complements SDT, and how it may be reinforced by research on SDT, as well as construct validity, and predictive validity of the core constructs from both theories, and lastly, the boundaries between the theoretical models.

What Happens When You Cross-Fertilize Your Chosen Models/Theories? What Are the Points of Convergence and Divergence that Exist, and the Creative Synthesis that Results?

Several areas of convergence have been identified. First, both theories postulate similar teaching practices which are believed to promote adaptive student outcomes. That is, the concepts of mixed and/or flexible grouping, classroom climate, and goal setting from HET bear resemblance to and align with autonomy support, structure, and involvement from SDT. Although SDT describes universal principles for teachers to apply in their interactions with individual students, in HET, more attention is paid to the level of the school class. Accordingly, HET may complement SDT, among others, in understanding effects of ability grouping. Second, findings from both research fields suggest a gap between theory and practice; although the teaching principles put forward by both theories are believed to be effective for all students, not all teachers optimally apply these principles in their teaching. Both theories acknowledge that teacher beliefs and

contextual factors may account for this gap between theory and practice. These teacher beliefs and contextual factors shape teaching practices and may prevent teachers from enacting these principles in their teaching, which may indirectly compromise students' opportunities for learning. Hence, both theories postulate that contextual conditions as well as teacher beliefs need to be addressed and taken into account when it comes to supporting teachers to teach in ways that align with both theories' principles.

Besides these areas of convergence, one point of divergence concerns the focus of SDT on need thwarting. Various studies in SDT (Haerens et al., 2015; Vansteenkiste et al., 2020) have called for a stronger focus on the "dark pathway," that is, the processes by which active thwarting of students' needs may cause need frustration and subsequently lead to various maladaptive student outcomes. To understand how these negative outcomes may be prevented, it may not be sufficient to focus only on need-supportive teaching (or lack thereof). Instead, SDT scholars have called for more insight into these need-thwarting behaviors as they may be predictive of negative outcomes such as amotivation and drop-out beyond what can be explained by merely a lack of need support. Contrarily, the three principles of HET refer specifically to positive teaching dimensions through which teachers can convey high expectations. Although prior research on teacher expectations has outlined the teaching practices of low expectation teachers (e.g., working in fixed-ability groups, limited feedback, negative social climate; Rubie-Davies, 2007), HET tends to concentrate on the supportive behaviors through which teachers can have a positive impact on students.

Nevertheless, the practices and beliefs of low expectation teachers do diverge from what in SDT would be regarded as need thwarting. Low expectation teachers do not necessarily actively thwart students' psychological needs (see Rubie-Davies, 2015). Instead, their behaviors are characterized by a level of diffidence and ineffectiveness. Levels of academic support are minimal but low expectation teachers would not be regarded as unfriendly toward their students. Similarly, to thwarting, however, low expectation teachers are controlling, but not unaccepting of student views. Instead controlling behaviors are revealed through their classrooms being very tightly structured with strict monitoring of behavior and adherence to classroom rules and routines. Students are encouraged to seek help and support from the teacher, not from each other. This is a further way in which the teacher maintains control. Finally, these teachers mostly have a clear idea about their goals for lessons—a further difference from need thwarting (i.e., chaos) in SDT. A key difference from high expectation teachers, however, is that these goals are not shared with students and nor are the success criteria for each lesson. Hence, students are unclear about their learning direction and what they need to do in order to be successful.

We did not identify additional points of divergence where the assumptions of both HET and SDT theories conflict with one another. Rather, the theories have different foci. SDT, for example, focuses more strongly on structure compared to HET. Nevertheless, through their different foci, the theories are able to complement each other.

What are Some Complementary Gaps that Might be Addressed Through Integrative Synthesis of Established Theories?

We identified several ways in which HET and SDT can complement each other (see Fig. 1). First, research from the broader strand of research on teacher expectations and research from HET provide more insights into why teachers adopt certain teaching practices. The traditional strand of research on teacher expectations suggests that teacher beliefs about individual students cause teachers to differentiate their practices. Moreover, HET suggests that there are between-teacher differences in the extent to which teachers differentiate their practices, with some teachers having and expressing high expectations of all students. These insights can complement SDT which, on the other hand, has focused more on explaining how teaching practices affect student outcomes through the psychological process of *need satisfaction*. Combining these insights leads to the comprehensive model presented in Fig. 1, which helps to understand how different teaching practices shape students' educational experiences and outcomes, and how differences in these teaching practices can be explained by teacher and contextual factors. Moreover, with SDT being a meta-theory of human motivation, development, and well-being, it can benefit from a more practical model like HET which fits within the meta-theory but is more intuitive for teachers.

How Does the Learning Environment Interface with Individual Differences in Your Integrative Model?

Both theories postulate general principles for effective teaching and state that any student would benefit if taught according to those principles. In that sense, both theories posit that differentiation between individual students is undesirable because that would imply that some students receive less support than others or that students are treated unequally with some students receiving more opportunities than others (Chatzisarantis et al., 2019). However, SDT also acknowledges that adapting to individual students' needs and providing contingent support is important to deal with individual differences. Vansteenkiste et al. (2018), for example, claim that teachers can support students' need for autonomy by providing meaningful rationales, for instance, by explaining the relevance of a specific topic to students' daily lives (Vansteenkiste et al., 2020). Depending on students' lives, this may be done differently for different students. Likewise, providing adequate tasks or feedback to students (components of structure in SDT) requires teachers to adapt to individual students' current level of understanding. Nevertheless, it is not completely clear in SDT how exactly teachers can adjust to individual student differences in an adaptive way.

HET, on the other hand, focuses on teachers having high expectations for all students and the practical implications of implementation. Although the emphasis is on teachers having high expectations for all students, Rubie-Davies (2015) consistently makes the point that high expectations are relative to achievement. In other words, expectations of what students can achieve will always be in advance of current levels but will vary for different students. Rubie-Davies (2015) argues, however, that the focus should always be on mastery of skills rather than performance relative to

peers. Students have clear learning goals that relate to their progress, and teacher feedback focuses on progress toward goals and what needs to be learned next. Ability is not made salient in high expectation classrooms; progress is. High expectation teachers also offer workshops related to specific skills that students need to learn but students opt into these workshops (at times with gentle prompting from teachers!). The students opting for different workshops will vary daily depending on what is being offered. This is just one way in which achievement becomes less salient in high expectation classrooms but enables targeted teaching of specific skills. These practices are congruent with SDT as they support students' needs for autonomy and competence but have not been described as concretely in SDT.

What Does Your Integrative Model Have to Say About Construct Validity and Predictive Validity (i.e., overlap in constructs, how constructs meaningfully predict learning outcomes)?

Our analysis of the convergence in the teaching practices put forward by HET and SDT identified several areas of conceptual overlap. We identified that there is convergence between the concepts of classroom climate and relatedness support. The actual teaching practices involved in creating a warm classroom climate and supporting students' need for relatedness are highly similar. Whereas goal setting in HET is assumed to promote students' autonomy and involves offering choices to students, SDT's notion of autonomy support also entails the opportunity for students to express their views. Moreover, although HET's concept of mixed ability grouping is assumed to promote students' competence, it is conceptually different from structure (i.e., SDT's notion of competence support), which entails the provision of guidance, feedback, and clear guidelines. To our knowledge, the conceptual overlap between HET and SDT has yet to be examined empirically. This would require studies which simultaneously addressed the teaching constructs from both theories and assessed the conceptual overlap through factor analyses. An interesting question would then be whether such an investigation would result in a three-dimensional factor structure in which the HET and SDT constructs mostly overlap, or in additional and unique factors. Furthermore, in terms of predictive validity, the teaching practices put forward by both theories are expected to promote a wide variety of student outcomes, including motivation, engagement, well-being, and academic outcomes. Various studies indeed have found support for the hypothesized relations between the teaching practices put forward by both theories and these outcomes (Rubie-Davies, 2015; Stroet et al., 2013), which supports the predictive validity of these constructs. It is unclear, however, to what extent the constructs from both theoretical stances have *unique* predictive validity and predict variance in student outcomes beyond what can be explained by the constructs from the other theory. Moreover, the majority of SDT studies are based on student reports and are cross-sectional (Stroet et al., 2013) whereas those in the field of HET are mostly teacher based. These include self-report (Rubie-Davies et al., 2012; Timmermans & Rubie-Davies, 2018), observational (Rubie-Davies, 2007; Wang et al., 2019), and interview data (Rubie-Davies, 2008; Rubie-Davies & Peterson, 2011) from teachers. Many of the studies also measure student outcomes (achievement as well

as motivation and self-beliefs) as a result of being in classes of high- versus low-expectation teachers (e.g., Rubie-Davies et al. 2020) and several of these studies have been longitudinal (e.g., Rubie-Davies, et al., 2018; Timmermans et al., 2021; Wang et al., 2020). Stronger support for predictive validity in SDT research could be offered through longitudinal studies focusing on intra-individual change and by incorporating alternative measures, including observations.

What Are the Boundaries Between the Theoretical Models? When Is It Helpful to Integrate or When Is It Better to Stay Within One Model?

Thus far, we have mostly focused on the teaching practices as put forward in HET and SDT because at this level both theories can be linked well. Linking the basic premises of HET and SDT—we discussed these in the Introduction—is much harder. Whereas HET originates from research on teachers and, in the theory, there is attention paid to where specific teaching practices stem from (i.e., teacher expectations), SDT has a different origin and in the theory, particularly, much attention is paid to the question of why teaching practices have an impact on students (i.e., via support and thwarting of students' basic psychological needs).

Final Thoughts

The integration of the two theories offers a way forward in terms of understanding and applying these two theoretical stances to the classroom. Integrating the insights from the two theoretical perspectives in actual classrooms would imply that teachers communicate high expectations to all their students through need-supportive interactions. In addition, through goal setting and structure, teachers can offer students clear directions for their learning coupled with a framework within which to be successful at their tasks and learning. Hence, the integration of HET and SDT appears to offer a fruitful and meaningful way for teachers to offer high-level learning opportunities to their students. It remains for future research to examine how the core constructs put forward by both theories coincide and jointly or uniquely predict students' motivation, learning, and well-being, and more importantly, how teachers in their classrooms may combine and integrate insights from both perspectives to create the most optimal learning opportunities for all their students.

Declarations

Conflict of Interest The authors declare no competing interests.

Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission

directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

References

- Ahmadi, A., Noetel, M., Parker, P., Ryan, R., Ntoumanis, N., Reeve, J., ... & Lonsdale, C. (2022). A classification system for teachers' motivational behaviors recommended in self-determination theory interventions. *PsyArXiv*. <https://orcid.org/0000-0002-2700-3987>
- Arabsolghar, F., & Elkins, J. (2001). Teachers' expectations about students' use of reading strategies, knowledge and behaviour in Grades 3, 5 and 7. *Journal of Research in Reading*, 24(2), 154–162. <https://doi.org/10.1111/1467-9817.00138>
- Assor, A., & Kaplan, H. (2002). Mapping the domain of autonomy support: Five important ways to enhance or undermine students' experience of autonomy in learning. In A. Efklides, J. Kuhl, & R. M. Sorrentino (Eds.), *Trends and prospects in motivation research* (pp. 101–120). Kluwer Academic Publishers.
- Babad, E. (1993). Teachers' differential behavior. *Educational Psychology Review*, 5(4), 347–376. <https://doi.org/10.1007/BF01320223>
- Babad, E. (2009). *The social psychology of the classroom*. Routledge.
- Babad, E. Y., Inbar, J., & Rosenthal, R. (1982). Pygmalion, Galatea, and the Golem: Investigations of biased and unbiased teachers. *Journal of Educational Psychology*, 74(4), 459–474. <https://doi.org/10.1037/0022-0663.74.4.459>
- Babad, E., Bernieri, F., & Rosenthal, R. (1989). Nonverbal communication and leakage in the behavior of biased and unbiased teachers. *Journal of Personality and Social Psychology*, 56(1), 89–94. <https://doi.org/10.1037/0022-3514.56.1.89>
- Babad, E. (1998). Preferential affect: The crux of the teacher expectancy issue. In J. Brophy (Ed.), *Advances in research on teaching: Expectations in the classroom* (Vol. 7, pp. 183–214). Emerald Publishing Ltd.
- Baten, E., Vansteenkiste, M., De Muynck, G. J., De Poortere, E., & Desoete, A. (2020). How can the blow of math difficulty on elementary school children's motivational, cognitive, and affective experiences be dampened? The critical role of autonomy-supportive instructions. *Journal of Educational Psychology*, 112(8), 1490–1505. <https://doi.org/10.1037/edu0000444>
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, 117(3), 497–529. <https://doi.org/10.1037/0033-2909.117.3.497>
- Belmont, M., Skinner, E., Wellborn, J., & Connell, J. (1992). *Two measures of teacher provision of involvement, structure, and autonomy support*. Technical report. University of Rochester.
- Bowlby, J. (1979). The making and breaking of affectional bonds: I. Aetiology and psychopathology in the light of attachment theory. *British Journal of Psychiatry*, 130(3), 201–210. <https://doi.org/10.1192/bjp.130.3.201>
- Brault, M. C., Janosz, M., & Archambault, I. (2014). Effects of school composition and school climate on teacher expectations of students: A multilevel analysis. *Teaching and Teacher Education*, 44, 148–159. <https://doi.org/10.1016/j.tate.2014.08.008>
- Brophy, J. E. (1983). Research on the self-fulfilling prophecy and teacher expectations. *Journal of Educational Psychology*, 75(5), 631–661. <https://doi.org/10.1037/0022-0663.75.5.631>
- Chatzisarantis, N. L., Ada, E. N., Ahmadi, M., Caltabiano, N., Wang, D., Thøgersen-Ntoumani, C., & Hagger, M. S. (2019). Differential effects of perceptions of equal, favorable and unfavorable autonomy support on educational and well-being outcomes. *Contemporary Educational Psychology*, 58, 33–43. <https://doi.org/10.1016/j.cedpsych.2019.02.002>
- Clarke, S., Timperley, H., & Hattie, J. (2003). *Unlocking formative assessment: Practical strategies for enhancing students' learning in the primary and intermediate classroom*. Hodder Moa Beckett.
- Connell, J. P., & Wellborn, J. G. (1991). Competence, autonomy, and relatedness: A motivational analysis of self-system processes. In M. R. Gunnar & L. A. Sroufe (Eds.), *Self processes and development* (pp. 43–77). Lawrence Erlbaum.
- Cooper, H., & Good, T. (1983). *Pygmalion grows up: Studies in the expectation communication process*. Longman.

- Deci, E. L., & Ryan, R. M. (1985). Intrinsic motivation and self-determination in human behavior. *Springer*. <https://doi.org/10.1007/978-1-4899-2271-7>
- Demanet, J., & Van Houtte, M. (2012). Teachers' attitudes and students' opposition. School misconduct as a reaction to teachers' diminished effort and affect. *Teaching and Teacher Education*, 28(6), 860–869. <https://doi.org/10.1016/j.tate.2012.03.008>
- Denessen, E., Hornstra, L., van den Bergh, L., & Bijlstra, G. (2020). Implicit measures of teachers' attitudes and stereotypes, and their effects on teacher practice and student outcomes: A review. *Learning and Instruction*, 28, 12–23. <https://doi.org/10.1016/j.learninstruc.2020.101437>
- Domen, J., Hornstra, L., Weijers, D., van der Veen, I., & Peetsma, T. (2020). Differentiated need support by teachers: Student-specific provision of autonomy and structure and relations with student motivation. *British Journal of Educational Psychology*, 90(2), 403–423. <https://doi.org/10.1111/bjep.12302>
- Fung, I. Y. Y., Wilkinson, I. A. G., & Moore, D. W. (2003). L1-assisted reciprocal teaching to improve ESL students' comprehension of English expository text. *Learning and Instruction*, 13(1), 1–31. [https://doi.org/10.1016/S0959-4752\(01\)00033-0](https://doi.org/10.1016/S0959-4752(01)00033-0)
- Gillies, R. M. (2016). Cooperative learning: Review of research and practice. *Australian Journal of Teacher Education*, 43(3), 39–54. <https://doi.org/10.14221/ajte.2016v41n3.3>
- Good, T. L., & Brophy, J. E. (2003). *Looking in classrooms* (9th ed.). Allyn and Bacon.
- Haerens, L., Aelterman, N., Vansteenkiste, M., Soenens, B., & Van Petegem, S. (2015). Do perceived autonomy-supportive and controlling teaching relate to physical education students' motivational experiences through unique pathways? Distinguishing between the bright and dark side of motivation. *Psychology of Sport and Exercise*, 16, 26–36. <https://doi.org/10.1016/j.psychsport.2014.08.013>
- Harlow, H. F. (1958). The nature of love. *American Psychologist*, 13(12), 673–685. <https://doi.org/10.1037/h0047884>
- Harris, M. J., & Rosenthal, R. (1985). Mediation of interpersonal expectancy effects: 31 meta-analyses. *Psychological Bulletin*, 97(3), 363–386. <https://doi.org/10.1037/0033-2909.97.3.363>
- Hattie, J. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. Routledge.
- Hornstra, L., Mansfield, C., Van der Veen, I., Peetsma, T., & Volman, M. (2015). Motivational teaching strategies: The role of beliefs and context. *Learning Environments Research*, 18, 363–392. <https://doi.org/10.1007/s10984-015-9189-y>
- Hornstra, L., Stroet, K., van Eijden, E., Goudsblom, J., & Roskamp, C. (2018). Teacher expectation effects on need-supportive teaching, student motivation, and engagement: A self-determination perspective. *Educational Research and Evaluation*, 24(3–5), 324–345. <https://doi.org/10.1080/13803611.2018.1550841>
- Jang, H., Reeve, J., & Deci, E. L. (2010). Engaging students in learning activities: It is not autonomy support or structure but autonomy support and structure. *Journal of Educational Psychology*, 102(3), 588–600. <https://doi.org/10.1037/a0019682>
- Keuning, T., van Geel, M., & Smienk-Otten, C. (2021). Differentiëren in 5, 4, 3...[differentiating in 5, 4, 3...] Pica.
- Marchand, G., & Skinner, E. A. (2007). Motivational dynamics of children's academic help-seeking and concealment. *Journal of Educational Psychology*, 99(1), 65–82. <https://doi.org/10.1037/0022-0663.99.1.65>
- McDonald, L., Flint, A., Rubie-Davies, C. M., Peterson, E., Watson, P., & Garrett, L. (2014). Teaching high expectation strategies to teachers through an intervention process. *Professional Development in Education*, 42(2), 290–307. <https://doi.org/10.1080/19415257.2014.980009>
- Merton, R. K. (1957). *Social theory and social structure*. Free Press.
- Pelletier, L. G., & Sharp, E. C. (2009). Administrative pressures and teachers' interpersonal behaviour in the classroom. *Theory and Research in Education*, 7(2), 174–183. <https://doi.org/10.1177/1477878509104322>
- Pelletier, L. G., Séguin-Lévesque, C., & Legault, L. (2002). Pressure from above and pressure from below as determinants of teachers' motivation and teaching behaviors. *Journal of Educational Psychology*, 94(1), 186–196. <https://doi.org/10.1037/0022-0663.94.1.186>
- Reeve, J. (2009). Why teachers adopt a controlling motivating style toward students and how they can become more autonomy supportive. *Educational Psychologist*, 44(3), 159–175. <https://doi.org/10.1080/00461520903028990>
- Reeve, J., Vansteenkiste, M., Assor, A., Ahmad, I., Cheon, S. H., Jang, H., Kaplan, H., Moss, J. D., Olausen, B. S., & Wang, C. K. J. (2014). The beliefs that underlie autonomy-supportive and controlling teaching: A multinational investigation. *Motivation and Emotion*, 38(1), 93–110. <https://doi.org/10.1007/s11031-013-9367-0>

- Rosenthal, R., & Jacobson, L. (1968). *Pygmalion in the classroom*. Holt, Rinehart, and Winston.
- Rosenthal, R. (1994). Interpersonal expectancy effects: A 30-year perspective. *Current Directions in Psychological Science*, 3(6), 176–179. <https://doi.org/10.1111/1467-8721.ep10770698>
- Rubie-Davies, C. M. (2006). Teacher expectations and student self-perceptions: Exploring relationships. *Psychology in the Schools*, 43(5), 537–552. <https://doi.org/10.1002/pits.20169>
- Rubie-Davies, C. M. (2007). Classroom interactions: Exploring the practices of high- and low- expectation teachers. *British Journal of Educational Psychology*, 77(2), 289–306. <https://doi.org/10.1348/000709906X101601>
- Rubie-Davies, C. M. (2008). Teacher beliefs and expectations: Relationships with student learning. In C. M. Rubie-Davies & C. Rawlinson (Eds.), *Challenging Thinking about Teaching and Learning* (pp. 25–39). Nova.
- Rubie-Davies, C. M., & Peterson, E. R. (2011). Teacher expectations and beliefs: Influences on the socio-emotional climate. In C. M. Rubie-Davies (Ed.), *Educational psychology: Concepts, research, and challenges* (pp. 134–149). Routledge.
- Rubie-Davies, C. M., & Rosenthal, R. (2016). Intervening in teachers' expectations: A random effects meta-analytic approach to examining the effectiveness of an intervention. *Learning and Individual Differences*, 50, 83–92. <https://doi.org/10.1016/j.lindif.2016.07.014>
- Rubie-Davies, C. M., Flint, A., & McDonald, L. (2012). Teacher beliefs, teacher characteristics and school contextual factors: What are the relationships? *British Journal of Educational Psychology*, 82(2), 270–288.
- Rubie-Davies, C. M., Peterson, E. R., Sibley, C. G., & Rosenthal, R. (2015). A teacher expectation intervention: Modelling the practices of high expectation teachers. *Contemporary Educational Psychology*, 40, 72–85. <https://doi.org/10.1016/j.cedpsych.2014.03.003>
- Rubie-Davies, C. M., Watson, P. W. S. J., Flint, A., Garrett, L., & McDonald, L. (2018). Viewing students consistently: How stable are teachers' expectations? *Educational Research and Evaluation*, 24(3–5), 221–240. <https://doi.org/10.1080/13803611.2018.1550836>
- Rubie-Davies, C. M., Meissel, K., Alansari, M., Watson, P. W., Flint, A., & McDonald, L. (2020). Achievement and beliefs outcomes of students with high expectation teachers. *Social Psychology of Education*, 23, 1173–1201. <https://doi.org/10.1007/s11218-020-09574-y>
- Rubie-Davies, C. M., Hattie, J. A. C., Townsend, M. A. R., & Hamilton, R. J. (2007). Aiming high: Teachers and their students. In *Progress in Educational Psychology Research* (pp. 65–91). N. Galwey (Ed.), Nova.
- Rubie-Davies, C. M. (2015). *Becoming a high expectation teacher: Raising the bar*. Routledge.
- Ryan, R. M. (1995). Psychological needs and the facilitation of integrative processes. *Journal of Personality*, 63(3), 397–427. <https://doi.org/10.1111/j.1467-6494.1995.tb00501.x>
- Ryan, R. M., & Deci, E. L. (2000a). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68–78. <https://doi.org/10.1037/0003-066X.55.1.68>
- Ryan, R. M., & Deci, E. L. (2000b). The darker and brighter sides of human existence: Basic psychological needs as a unifying concept. *Psychology Inquiry*, 11(4), 319–338. https://doi.org/10.1207/S15327965PLI1104_03
- Ryan, R. M., & Deci, E. L. (2017). Self-determination theory: Basic psychological needs in motivation, development, and wellness. *Guilford Publications*. <https://doi.org/10.1521/978.14625/28806>
- Ryan, R. M., & Deci, E. L. (2020). Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions. *Contemporary Educational Psychology*, 61, 101860. <https://doi.org/10.1016/j.cedpsych.2020.101860>
- Salomon, G. (1981). Self-fulfilling and self-sustaining prophecies and the behaviors that realize them. *American Psychologist*, 36(11), 1452–1453. <https://doi.org/10.1037/0003-066X.36.11.1452>
- Skinner, E. A., & Belmont, M. J. (1993). Motivation in the classroom: Reciprocal effects of teacher behavior and student engagement across the school year. *Journal of Educational Psychology*, 85(4), 571–581. <https://doi.org/10.1037/0022-0663.85.4.571>
- Skinner, E., Furrer, C., Marchand, G., & Kindermann, T. (2008). Engagement and disaffection in the classroom: Part of a larger motivational dynamic? *Journal of Educational Psychology*, 100, 765–781. <https://doi.org/10.1037/a0012840>
- Skinner, E. A., Zimmer-Gembeck, M. J., & Connell, J. P. (1998). Individual differences and the development of perceived control. *Monographs of the Society for Research in Child Development*, 63 (2–3, Whole No. 204). <https://doi.org/10.2307/1166220>
- Stefanou, C. R., Perencevich, K. C., DiCintio, M., & Turner, J. C. (2004). Supporting autonomy in the classroom: Ways teachers encourage student decision making and ownership. *Educational Psychologist*, 39(2), 97–110. https://doi.org/10.1207/s15326985ep3902_2

- Stroet, K., Opendakker, M. C., & Minnaert, A. (2013). Effects of need supportive teaching on early adolescents' motivation and engagement: A review of the literature. *Educational Research Review*, 9, 65–87. <https://doi.org/10.1016/j.edurev.2012.11.003>
- Stroet, K., Opendakker, M. C., & Minnaert, A. (2015). Need supportive teaching in practice: A narrative analysis in schools with contrasting educational approaches. *Social Psychology of Education*, 18(3), 585–613. <https://doi.org/10.1007/s11218-015-9290-1>
- Thorndike, R. L. (1968). Review of Pygmalion in the classroom. *American Educational Research Journal*, 5, 708–711.
- Timmermans, A. C., & Rubie-Davies, C. M. (2018). Do teachers differ in the level of expectations or in the extent to which they differentiate in expectations? Relations between teacher-level expectations, teacher background and beliefs, and subsequent student performance. *Educational Research and Evaluation*, 24(3–5), 241–263. <https://doi.org/10.1080/13803611.2018.1550837>
- Timmermans, A. C., Rubie-Davies, C. M., & Rjosk, C. (2018). Pygmalion's 50th anniversary: The state of the art in teacher expectation research. *Educational Research and Evaluation*, 24(3–5), 91–98. <https://doi.org/10.1080/13803611.2018.1548785>
- Timmermans, A. C., Rubie-Davies, C. M., & Wang, S. (2021). Adjusting expectations or maintaining first impressions? The stability of teachers' expectations of students' mathematics achievement. *Learning and Instruction*, 75. <https://doi.org/10.1016/j.learninstruc.2021.101483>
- Van den Berghe, L., Soenens, B., Vansteenkiste, M., Aelterman, N., Cardon, G., Tallir, I. B., & Haerens, L. (2013). Observed need-supportive and need-thwarting teaching behavior in physical education: Do teachers' motivational orientations matter? *Psychology of Sport and Exercise*, 14(5), 650–661. <https://doi.org/10.1016/j.psychsport.2013.04.006>
- Van den Broeck, L., Demanet, J., & Van Houtte, M. (2020). The forgotten role of teachers in students' educational aspirations. School composition effects and the buffering capacity of teachers' expectations culture. *Teaching and Teacher Education*, 90, 103015. <https://doi.org/10.1016/j.tate.2020.103015>
- Vansteenkiste, M., & Ryan, R. M. (2013). On psychological growth and vulnerability: Basic psychological need satisfaction and need frustration as a unifying principle. *Journal of Psychotherapy Integration*, 23(3), 263–280. <https://doi.org/10.1037/a0032359>
- Vansteenkiste, M., Aelterman, N., De Muynck, G. J., Haerens, L., Patall, E., & Reeve, J. (2018). Fostering personal meaning and self-relevance: A self-determination theory perspective on internalization. *The Journal of Experimental Education*, 86(1), 30–49. <https://doi.org/10.1080/00220973.2017.1381067>
- Vansteenkiste, M., Ryan, R. M., & Soenens, B. (2020). Basic psychological need theory: Advancements, critical themes, and future directions. *Motivation and Emotion*, 44(1), 1–31. <https://doi.org/10.1007/s11031-019-09818-1>
- Vogler, K. E. (2008). Asking good questions. *Educational Leadership*, 65(9), 469–485.
- Wang, S., Rubie-Davies, C. M., & Meissel, K. (2018). A systematic review of the teacher expectation literature over the past 30 years. *Educational Research and Evaluation*, 24(3–5), 124–179. <https://doi.org/10.1080/13803611.2018.1548798>
- Wang, S., Rubie-Davies, C. M., & Meissel, K. (2019). Instructional practices and classroom interactions of high and low expectation teachers in China. *Social Psychology of Education*, 22(4), 841–866. <https://doi.org/10.1007/s11218-019-09507-4>
- Wang, S., Rubie-Davies, C. M., & Meissel, K. (2020). The stability and trajectories of teacher expectations: Student achievement level as a moderator. *Learning and Individual Differences*, 78, 101819. <https://doi.org/10.1016/j.lindif.2019.101819>
- Weinstein, R. S. (1993). Children's knowledge of differential treatment in school: Implications for motivation. In T. M. Tomlinson (Ed.), *Motivating students to learn: Overcoming barriers to high achievement* (pp. 197–224). McCutchan.
- Weinstein, R. S., & McKown, C. (1998). Expectancy effects on "context": Listening to the voices of students and teachers. In J. Brophy (Ed.), *Advances in Research on Teaching: Expectations in the Classroom* (pp. 215–242). JAI.
- Weinstein, R. S. (2002). *Reaching higher: The power of expectations in schooling*. Harvard.
- Zohar, A., Degani, A., & Vaaknin, E. (2001). Teachers' beliefs about low-achieving students and higher order thinking. *Teaching and Teacher Education*, 17(4), 469–485. [https://doi.org/10.1016/S0742-051X\(01\)00007-5](https://doi.org/10.1016/S0742-051X(01)00007-5)