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From general to student-specific teacher self-efficacy

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CHAPTER 6

GENERAL DISCUSSION

This dissertation aimed to take stock of where the field of teacher self-efficacy has been and the steps needed to be taken to move current theory and research on TSE forward. First off, Chapter 1 outlined several critical challenges in the field of TSE that must be accounted for to advance understanding of the self-efficacy construct and identify useful research-based insights about TSE that may help teachers better deal with diversity in class. Motivated by Bandura's (1977, 1986, 1997) social-cognitive principles, these theoretical and methodological issues were subsequently explored in Chapters 2 to 5, within which the focus gradually shifted from teachers' general, classroom-level self-efficacy beliefs to TSE at the student-specific level. The General Discussion now seeks a return to the challenges raised in Chapter 1. In this last chapter, thought is given to the extent to which these issues have been addressed by the four studies in this dissertation, to noteworthy or contradictory empirical findings across these studies, and to new challenges that seem to have emerged out of this work. In addition, implications of the results of the studies for educational research and practice are discussed in the closing section of this chapter.

ADDRESSING CHALLENGES REGARDING THE NATURE AND CONSEQUENCES OF TSE

The last forty-odd years have seen a rise in research focusing on the effects of teacher self-efficacy on teachers' behaviors, feelings, and actions, and their students' learning outcomes in class. What initially started out as a modest side-branch of school effectiveness research now seems to have blossomed into a massive body of work reflecting different traditions and theories, various definitions, and innumerable outcomes of TSE related to the quality of classroom processes, students' academic adjustment, and teachers' well-being (e.g., Klassen & Chiu, 2010, 2011; Klassen, Tze, Betts, & Gordon, 2011; Skaalvik & Skaalvik, 2007, 2010; Tschannen-Moran & Woolfolk Hoy, 2001). To a considerable extent, these different and sometimes isolated traditions have each provided important pockets of insight into teachers' sense of self-efficacy. However, one remaining challenge identified in Chapter 1 is to bring these existing fields of study together and afford a clear, integrative perspective on the

construct of TSE and its consequences (cf. Henson, 2001; Wheatley, 2005; Wyatt, 2016). In Chapter 2, we took up this challenge by proposing a process-oriented framework that allowed us to integrate and synthesize the current body of work on TSE and its consequences. Of note, this model seems to complement and extend other seminal frameworks of teacher self-efficacy (e.g., Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998; Woolfolk Hoy, Hoy, & Davis, 2009) in two essential ways.

THE NATURE OF TSE

Unlike prior conceptual models (Tschannen-Moran et al., 1998), the process-oriented framework attempted, first, to distinguish Bandura's ideas from other potentially relevant theories and constructs, including locus of control, self-concept, competence, and self-esteem. According to Bandura (1997), these theories and concepts fail to do justice to the highly particularized and multifaceted nature of teacher self-efficacy, and usually tend to measure a different construct. For that reason, we took a first theoretical step in elucidating and reinstating the social-cognitive foundation of TSE, which has every so often been obscured by Rotter's (1966) conceptual scheme (cf. Henson, 2001; Tschannen-Moran & Woolfolk Hoy, 2001; Wheatley, 2005; Wyatt, 2014). In view of the results of Chapter 2, this step did not seem an unnecessary exercise. Largely consistent with the review of Klassen et al. (2011), we noted that only a quarter of the 165 reviewed studies tended to treat TSE as a multifaceted construct involving various domains of activity. Of this quarter of studies, some defined the self-efficacy construct at a highly specific level (e.g., TSE for data-driven decision making or TSE in student-centered teaching styles), whereas others operationalized teachers' self-efficacy as a construct that may also be generalizable to other contexts (e.g., computer self-efficacy). Additionally, a considerable number of studies, despite employing Tschannen-Moran and Woolfolk Hoy's (2001) multifaceted measure, tended to calculate total scores of TSE, instead of gauging the three intended domains of instructional strategies, classroom management, and student engagement. Hence, the current field of work on TSE seems to have fallen short in defining the construct of TSE in the way Bandura initially intended, thereby hindering the process of seeking consensus on TSE and its consequences.

It is an interesting question why the large majority of studies may still resort to the "one measure fits all" (Bandura, 2006, p. 307) approach in studying teachers' sense of self-efficacy. Indeed, in Chapter 3, it was argued that domain-general operationalizations of TSE, though conveniently serving diverse purposes, may be problematic in the sense that they leave much

ambiguity about what is being measured and which specific tasks teachers have to accomplish (cf. Bandura, 1997, 2006). Also, teachers' general capability beliefs have previously been claimed to inadequately match with the particular outcomes that are being measured, thereby potentially losing their explanatory and predictive merit (*ibid.*). Of note, these issues were, in part, also evident in Chapter 2, where teachers' general self-efficacy beliefs appeared to be somewhat poorer predictors of a range of adjustment outcomes in class than domain-specific capability beliefs.

Beyond the "thorny issues" that Tschannen-Moran and Woolfolk Hoy (2001, p. 794) describe in their paper on the meaning and measurement of TSE, there may be some other reasonable explanations for the current lack of domain-specific self-efficacy research. One justification that can be extrapolated from Chapter 2 is that many empirical studies, probably due to pragmatic reasons, tend to investigate samples involving teachers from multiple grades and across different subjects. In such cases, it may be particularly difficult to tailor measures of TSE to relevant realms of activity. First-grade teachers who usually have one class and teach several subjects may have to deal, for instance, with far different task and situational demands than high-school teachers, who typically specialize in one subject area and may see various classes a day. General measures of TSE, then, may have more practical relevance in that they are designed to serve various samples and teaching contexts. The potential benefits of these general measures may, however, be bought at the price of the predictive power of TSE. Efforts to discover how teachers' self-efficacy beliefs may contribute to their functioning in different domains of activity should therefore ideally focus on particular grades or school periods (e.g., preschool, the elementary years, or the high-school period). This narrower focus may help future researchers disclose areas of teaching and learning within which teachers feel less capable and need additional training or intervention. Results from the studies described in Chapters 3 to 5, for instance, underscore the need to provide upper elementary teachers with some additional help in domains of behavior management and emotional support.

Another reason for falling back on teachers' more general self-efficacy beliefs is that the outcome domains of interest may, somewhat paradoxically, be too specific as well. To be more precise, some of the outcome variables of the reviewed studies in Chapter 2, including teachers' attitudes toward web-based instruction or their self-survival concerns, require self-efficacy measures that are also cast in a very specific form (Bandura, 1997, 2006). Yet, there may be a danger of developing items that are so detailed that they prevent researchers from

drawing conclusions about TSE that, to some extent, are generalizable across outcome variables and teaching domains (e.g., Pajares, 1996; Tschannen-Moran & Woolfolk Hoy, 2001). To avoid such issues, relying on teachers' general sense of efficacy may be a somewhat safer option. Studies concentrating on very specific outcomes thus serve as a useful reminder that, to understand TSE and its consequences, the selection of and generalizability across outcome variables of interest are just as important as the adequate measurement of TSE itself.

THE CONSEQUENCES OF TSE

A second distinction from prior conceptual models of TSE (Tschannen-Moran et al., 1998) is that the process-oriented framework yielded a set of specific parameters for meaningfully differentiating between the various *consequences* of teacher self-efficacy. By carefully sorting through the latest theory and evidence on TSE, and using both the frameworks of Pianta et al. (2008) and Woolfolk Hoy et al. (2009), it was possible to identify three major outcome domains of TSE, including the quality of classroom processes, students' academic adjustment, and teachers' sense of well-being. These domains, as well as their underlying dimensions, helped in the quest to interpret the findings emerging from each separate field of study and provided directions for future research.

The quality of classroom processes

Findings related to instructional, organizational, and emotional aspects of *classroom processes* generally appeared to lack a clear focus. Overall, studies in this field covered a wide range of teaching strategies, behaviors, attitudes, and decisions, each of which tended to be explored only once or twice in isolated, cross-sectional studies focusing on different student groups and/or grades. As a result, it appeared to be difficult to seek consensus on the direct links among TSE and the quality of classroom processes. Across these studies, two other interesting outcome patterns did emerge, though. First, a clear lack of research was noticed that specifically concentrated on teachers' ability to establish a warm connection with their students and to be responsive to their social, emotional, and developmental needs (cf. Hamre, Hatfield, Pianta, & Jamil, 2014; Pianta et al., 2008). Importantly, subsequent chapters show that this domain of emotional support can be distinguished separately from other important domains of TSE (Chapter 3), and may provide new insights into teachers' ability to deal with individual students with a variety of social-emotional behaviors (Chapters 4 and 5). As such, teachers' sense of self-efficacy in the domain of emotional support may advance further understanding of the multifaceted ways in which teachers' self-percepts of efficacy function.

Second, in a number of the reviewed studies, teachers' years of experience appeared to play a role in the association between TSE and teacher practices that define the classroom quality. For instance, tenured educators with high levels of *general* self-efficacy were found to be likely to use more diverse instructional strategies, to differentiate more frequently, to change their goals according to students' needs, and to be more positive about the implementation of such instructional strategies than less experienced teachers (Allinder, 1995; Martin, Sass, & Schmitt, 2012; Wertheim & Leyser, 2002; Weshah, 2012). Other empirical research (e.g., Klassen & Chui, 2010; Morris-Rothschild & Brassard, 2006) indicated that TSE may increase with experience as teachers become better able to effectively instruct, manage, and motivate the children in their classrooms. The conclusion that teaching experience may have a potentially beneficial (by)effect on TSE did not hold across the empirical studies on student-specific TSE, though. Chapter 3 demonstrated, for instance, that teachers with little (<5 years), average (5–10 years), or high experience (>10 years) did not significantly differ in their sense of self-efficacy across domains and individual students. Using a smaller, longitudinal sample in Chapter 5, we additionally failed to establish the presumed associations between teaching experience and domain- and student-specific TSE over time. Only in Chapter 4 did teachers' years of experience concurrently add to the prediction of student-specific TSE, but only in domains of student engagement and emotional support.

There may be several reasons for these contradictory findings. On the theoretical front, it can be suggested that teachers' years of experience are most likely to help them become sensitized to students' signals, emotional needs, and expectations in class (e.g., Kokkinos, Panayiotou, & Davazoglou, 2005). Compared to instructional and classroom organizational skills, such more *soft* competencies do usually not form a major part of their training and may therefore be best learned and developed on the job (Hargreaves, 1998). This might explain why the studies repeatedly failed to establish significant associations between teaching experience and student-specific TSE for instructional strategies and behavior management. Another possibility is that (some) student-specific capability beliefs, more than generalized, classroom-level TSE, tend to depend on characteristics of individual students, rather than such teacher features as experience. Indeed, results from both Chapter 3 and 4 demonstrated that most of the variability in TSE occurred within teachers, mirroring the social-cognitive view that TSE, despite reflecting some degree of trait variability, is most likely to vary across teaching domains and the students toward whom their behaviors are directed. Lastly, it should be noted that the samples used in Chapters 3 to 5 included teachers who worked, on average, more than 16 years

in primary education. This is perhaps not surprising, given that more than one third of all elementary school teachers in the Netherlands are over 50 (DUO, 2014). Yet, this relative lack of beginning teachers, whose beliefs in their capability have yet to be established, might have biased our results. To avoid such potential biases, teacher self-efficacy research incorporating a larger number of beginning teachers is definitely warranted. Such research may also help explain the complex interrelationships between TSE, teachers' years of experience, and their decision to leave or stay in the profession.

Students' academic adjustment

The studies reviewed in Chapter 2 generally imply that teachers' sense of self-efficacy is a positive predictor of students' academic performance in various subjects, including math, history, biology, and, to a lesser extent, reading and writing. In addition, aspects of students' motivation, including student engagement, intrinsic and extrinsic motivation, academic expectations, self-efficacy, and goal orientations, appeared to be predicted by their teachers' general self-efficacy beliefs. It should be kept in mind, however, that small samples, generalized instruments, poor methodologies, and cross-sectional designs were fairly common in this literature. Particularly those studies focusing on student achievement appeared to lack methodological rigor and to reveal small associations between TSE and students' academic performance. Following Bandura (1997, 2006), upcoming research on links between TSE and students' academic adjustment would profit from self-efficacy measures that are tailored to tasks and domains that best reflect teachers' capability to increase individual students' motivation and academic achievement. Compared to generalized instruments, such highly particularized scales may have more predictive power, as they measure the type of TSE beliefs that determine which activities teachers embark on and how well they perform those activities in relation to a particular child (Bandura, 1997). In this sense, the student-specific TSES, as described in Chapter 3, may be a useful tool to better understand the role of teachers' self-efficacy in students' academic adjustment.

Also noteworthy is that potential indirect associations between TSE and students' academic adjustment have been investigated in only three of the 165 reviewed studies. This is despite the nowadays common belief that TSE, as a personal characteristic, mainly affects student and teacher outcomes through patterns of teacher behavior and practices that define the quality of the classroom environment (Guo, McDonald Connor, Yang, Roehring, & Morrison, 2012; Midgley, Feldlaufer, & Eccles, 1989; Woolfolk Hoy & Davis, 2005). Perhaps, the general lack

of rigorous longitudinal (structural equation modeling) techniques and small samples used in the reviewed studies may explain why researchers have fallen short in investigating the hypothesized indirect links between TSE and students' academic adjustment. The field of TSE, therefore, would probably profit from research using models in which mediational relationships can be established and differing pathways of influences can be compared.

Teachers' well-being

In contrast to the quality of classroom processes and students' adjustment, the literature on TSE and its consequences for teachers' well-being yielded far more reliable and consistent results. In total, 71 relatively well-executed studies provided support for the contention that generally self-efficacious teachers may suffer less from stress and burnout symptoms, and experience higher levels of personal commitment and job satisfaction. Perhaps even more compelling are the handful of studies positing that classroom processes and experiences related to student misbehavior and positive affect may function as a *go-between* in the relationship between teachers' self-efficacy and their subsequent sense of well-being (e.g., Briones, Taberero, & Arenas 2010; Doménech-Betoret, 2009; Duffy & Lent, 2009; Lent et al., 2011; Sass, Seal, & Martin, 2011). These investigations seem to accord relatively well with evidence from Chapter 5, in which teachers' student-specific capability beliefs were found to be inextricably intertwined with their experiences of conflict and closeness in relationships with disruptive students. Therefore, it seems to be relevant for future researchers to combine unique elements of self-efficacy research on *classroom processes* and *teacher well-being* in a single, longitudinal model. This may yield a fuller portrait of teachers' sense of self-efficacy and its consequences over time than presented by any one existing strand of research, and provide much needed guidelines for educational researchers and practitioners alike.

ADDRESSING CHALLENGES REGARDING THE MEASUREMENT OF TSE

In Chapter 1, several important issues regarding the measurement of TSE were highlighted that may warrant further attention in future educational research. Most of those, including adequate domain specification and the inclusion of environmental obstacles against which teachers can judge their self-efficacy, are as old as the work of Tschannen-Moran and colleagues (1998, 2001). Yet, despite giving full attention to these issues (e.g., Henson, 2002; Klassen et al., 2011; Wheatley, 2005; Wyatt, 2014) none of the current studies have, to our knowledge, come up with a single measure that may adequately address them. Using

Tschannen-Moran and Woolfolk Hoy's (2001) Teacher Sense of Efficacy Scale (TSES) as a baseline, a new measure was therefore developed and evaluated in Chapter 3 that may gauge the teacher self-efficacy construct in ways that it more reliably reflects the social-cognitive foundation of self-efficacy.

DOMAIN SPECIFICATION OF TSE

The search for methods to empirically capture the meaning of TSE began by clarifying what it takes for elementary school teachers to succeed in given domains of teaching and learning. To this end, we largely drew on the review results from Chapter 2 and the CLASS-framework of Pianta et al. (2008) and discovered that the TSES, next to its original domains of instructional strategies, classroom/behavior management, and student engagement, might require an additional domain of emotional support. Similar to the CLASS-dimensions of positive climate, student sensitivity, and regard for student perspectives, this additional domain was specified to involve tasks and responsibilities related to how well teachers can establish caring relationships with students, acknowledge students' opinions and feelings, and create settings in which students feel secure to explore and learn. Of note, some other domains that have previously been suggested by Bandura (undated) were not included in the student-specific TSES. These domains, comprising tasks and responsibilities related to teachers' ability to influence decision making, school resources, and community involvement, have already been discarded by Tschannen-Moran and Woolfolk Hoy (2001) as being not representative of the kinds of teaching tasks that typically make up elementary teachers' daily activities. Moreover, such domains, albeit part of teachers' job, did not seem relevant to study teachers' sense of self-efficacy for teaching and learning in relation to individual students in the classroom.

The final confirmatory factor model in Chapter 3 suggested that the four domains of the student-specific TSES can be distinguished separately from one another. At the same time, though, the results pointed to a high degree of correspondence among domains of instructional strategies, student engagement, and emotional support. Evidently, these results may raise issues with respect to construct and discriminant validity. Yet, there may be some conditions that may explain this unexpectedly high level of covariance. First, large associations among teachers' self-efficacy beliefs in various domains of teaching and learning may occur when these domains influence one another in a reciprocal way. For instance, it is likely that teachers' emotional connection and positive communications with individual students (*emotional support*) may help these students become motivated for their schoolwork (*student engagement*), and

see the relevance and meaningfulness of their teachers' instruction (*instructional support*; cf. Hamre & Pianta, 2005; Pianta et al., 2008). In a related vein, it is possible that teachers experience roughly the same student-specific self-efficacy beliefs across teaching domains because they may develop different instructional, affective, and classroom organizational skills simultaneously around the behaviors and needs of individual children (Bandura, 1997, 2006; Hamre et al., 2013, 2014). It is likely that this process of concurrent skill development in dissimilar teaching areas, in which individual children serve as the common denominator, may result in *student-specific* abilities that are somewhat different from teachers' more general teaching skills. Accordingly, it might explain why the domains of student-specific TSE show a higher level of correspondence with one another than self-efficacy domains measured at the classroom-level (e.g., Tschannen-Moran & Woolfolk Hoy, 2001; Wolters & Daugherty, 2007). Lastly, Bandura (1997, 2006) has pointed to powerful experiences of mastery or failure with individual children that may yield a transformational reorganization of TSE, manifested across various domains of teaching and learning. To some extent, results from Chapter 5 seem to substantiate this notion, suggesting that teachers unfortunately experience higher levels of conflict in the relationship with disruptive children, which may subsequently transform into lower levels of self-efficacy toward these individual students across teaching domains.

Taken together, the substantial correlations among the domains of the student-specific TSES give some reason to believe that teachers, next to more generic teaching skills, tend to concurrently develop and orchestrate highly overlapping cognitive, social, emotional, and behavior skills to deal with a particular child. The presence of such student-specific skills may explain why only moderate correlations between the original, classroom-level TSES and the student-specific TSES at the (aggregated) between-teacher level were established in Chapter 3. Evidently, replication of the results in Chapter 3 is needed to firmly establish the validity of the student-specific TSES, both in comparable, but larger samples, as well as across grades, countries, types of education, and different children. Yet, it may be safe to argue that teachers' functioning in distinct areas of teaching may be better observed in relation to the particular children toward whom their actions are directed than the classroom as a whole.

DEFINING OBSTACLES

In response to Bandura's (1997, 2006) claim that self-efficacy beliefs must be measured in light of environmental obstacles, the original TSES was further adapted by making its individual items student-specific. By letting teachers report on their self-efficacy for randomly selected

students, it became possible to specify gradations of challenge to which teachers could adjudge their capability beliefs, without further complicating the items of the original TSES. The decision to take the TSES to the student-specific level was based on the idea that obstacles to TSE tend to be mainly reflected in the behaviors, needs, and characteristics of individual students in class. In the conceptual model of Tschannen-Moran and colleagues (1998), for instance, teachers' assessment of what will be required of them in the anticipated teaching situation has been hypothesized to be affected by micro-contextual factors, including students' abilities and motivation. To some extent, this idea is also mirrored in their Teacher Sense of Efficacy Scale, where some items include such gradations of challenge as 'very capable students', 'problem students', and 'students who are failing' (Tschannen-Moran & Woolfolk Hoy, 2001). The results from Chapter 3 provided supporting evidence for the ideas of Tschannen-Moran et al. (1998), indicating that the variability at the state (*within-teacher*) level was larger than at the trait (*between-teacher*) level. This indicates that teachers' sense of self-efficacy may not only fluctuate across teaching tasks and domains, but may also differ in relation to individual students.

Teachers' personal self-efficacy beliefs in relation to individual students appeared to vary most in the domain of behavior management, suggesting that this domain may be most dependent on such obstacles as individual students' behaviors and characteristics. This finding accords well with evidence from Chapter 4, in which individual students' prosocial, internalizing, and particularly externalizing behavior predicted more variance in teachers' self-efficacy for behavior management than any other teaching domain. Other research (e.g., Emmer & Hickman, 1991; Kyriacou, 2001; Roehrig, Pressley, & Talotta, 2002) has also suggested that issues such as spending too much time on discipline, not knowing when and how to punish a student, and dealing with students who are behaviorally challenging, are usually the most problematic for teachers. This may explicate, in part, why teachers' sense of self-efficacy for classroom management and/or discipline appeared to be most frequently investigated in the literature (see Chapter 2), either as a single teaching area (e.g., Brouwers & Tomic, 2000; Emmer & Hickman, 1991; Yoon, 2004) or as a sub-domain of TSE (e.g., Skaalvik & Skaalvik, 2007; Tschannen-Moran & Woolfolk Hoy, 2001; Woolfson & Brady, 2009). Overall, both prior research and current findings seem to suggest that teachers may gain the most from tailored advice on managing individual students' behaviors, and especially those of an externalizing nature.

TEACHERS' INDIVIDUAL INTERPRETATIONS OF THE STUDENT-SPECIFIC TSES

It should be noted that the examination of teachers' student-specific self-efficacy beliefs may present difficulties with respect to measurement non-invariance across teachers, or cluster bias. Specifically, Chapter 3 demonstrated that teachers are likely to differ in their individual interpretation of the student-specific TSES-items, and particularly those that tapped into their sense of student-specific self-efficacy for instructional strategies and student engagement. Given that these self-efficacy domains primarily make an appeal to teachers' cognitive and affective skills, our findings may raise the question of which other *internal personal factors* may cause differences in response processes. Following Bandura's (1997) model of triadic reciprocal causation, such internal personal factors, including cognitive and affective events, may act as interacting determinants that influence teachers' perceptions of environmental events, their self-efficacy, and their behaviors. Accordingly, it is possible that personal factors, such as teachers' affective state, their knowledge and skill level, or their personality, may affect the way teachers ultimately interpret the individual items of the student-specific TSES, thereby causing potential differences in response processes. Exploration of personal internal factors, as well as other potential contextual features that may explain measurement non-invariance across teachers therefore evidently merits attention in future research. One potential way of doing so is to investigate cluster bias in the student-specific TSES with respect to violators at the within- and between-teacher level separately for each teaching domain. Such analyses may be more feasible in that they would allow for smaller sample sizes to achieve adequate statistical power, and may overcome the issue of multicollinearity.

ADDRESSING CHALLENGES REGARDING THE FORMATION AND DEVELOPMENT OF TSE

Although ample research has attested to the predictive power of TSE for a range of student and teacher outcomes (Chapter 2), there has been a noticeable lack of efforts to investigate the various sources of TSE and the processes through which these beliefs are formed. Chapters 4 and 5 of this dissertation, therefore, were specifically targeted at exploring these unresolved challenges, both fully concentrating on TSE at the student-specific level. Generally, results from Chapter 4 seem to verify the assumption made in Chapter 1 that personal characteristics of individual students, including their externalizing, internalizing, and prosocial behavior, may serve as potent sources of teachers' self-efficacy. Other background characteristics, such as students' gender and age, did not appear to be predictive of teachers' student-specific self-efficacy beliefs.

Perhaps the most important finding of Chapter 4 is that elementary school teachers were likely to experience the lowest levels of self-efficacy in relation to individual students who exhibited externalizing behavior in class. These externalizing student behaviors explained most of the variance in teachers' student-specific self-efficacy for behavior management, followed by domains of student engagement, instructional strategies, and emotional support. Remarkably, those outcomes seem to suggest that teachers' beliefs in their capability to establish warm connections with individual students and to be sensitive and responsive to their needs are least affected by externalizing student behavior. It could be that teachers may use their emotional supports as a way to increase externalizing students' academic and social behaviors. Prior research from Henricsson and Rydell (2004), for instance, has shown that disruptive children generally get more attention, praise, and encouragement from their teachers than unproblematic students, whose behaviors are more likely to be maintained by intrinsic interest in their schoolwork (e.g., Beaman & Wheldall, 2000). Such positive communications may provide teachers with the type of enactive mastery experiences that, in part, help them overcome unsuccessful dealings with disruptive children and, in turn, increase their sense of efficacy toward these students in the emotional support domain (Bandura, 1997). Possibly, this might also explain why individual students' prosocial behavior appeared to be the most important source of TSE for emotional support, followed hot on the heels by domains of behavior management, instructional strategies, and student engagement.

Spurred by finding that disruptive student behaviors are likely to be one of the more vital sources of teachers' self-efficacy, these behaviors were investigated further in Chapter 5. Here, the quality of the student–teacher relationship was explored as an intermediary mechanism by which the association between students' disruptive behaviors and student-specific TSE could be explained. Results from this short-term longitudinal study only partly supported the idea that disruptive student behaviors, as sources of student-specific TSE, become instructive to TSE only through teachers' subjective evaluations of these behaviors in the context of their daily interactions with individual students. More specifically, tentative evidence was found for the hypothesis that teacher-perceived conflict in the student–teacher relationship mediates the longitudinal association between students' disruptive behavior and teachers' student-specific self-efficacy beliefs. Contrary to expectations, however, teacher-perceived closeness was not found to mediate the link between disruptive student behavior and student-specific TSE. Rather, support was provided for an alternative model, representing the hypothesis that student-specific TSE, irrespective of teaching domain, mediated the association between

disruptive student behavior and teachers' perceptions of closeness in the student–teacher relationship over time.

The complex outcomes reported in Chapter 5 seem to complement and extend the cross-sectional results from Chapter 4, both empirically and theoretically. On the empirical front, the differences in the magnitude of coefficients between Chapter 4 and Chapter 5 suggest that the much larger cross-sectional associations between disruptive student behavior and student-specific TSE in Chapter 4 were probably inflated by the stable characteristics of the association between these two constructs (Little, 2013). As such, the longitudinal, cross-lagged approach of Chapter 5 probably yielded more reliable coefficients.

Theoretically, the differential patterns of association for closeness and conflict seem to underscore the importance of viewing teachers' self-efficacy beliefs as both *products* and *constructors* of daily interactions and relationships with individual children. Prior studies echo this standpoint (e.g., Bandura, 1997; Fives & Alexander, 2004; Raudenbusch, Rowan, & Cheong, 1992; Wyatt, 2016). Those studies suggest that teachers' self-efficacy beliefs in relation to individual students in specific contexts and their knowledge and belief structures (i.e., *mental representational models*) should be considered in relation to one another, rather than independently, to reveal a fuller portrait of the forms of knowledge and beliefs that teachers draw upon when interacting with a particular child. Unfortunately, however, very little research to date has explored such reciprocal associations, probably because TSE, in contrast to dyadic student–teacher relationships, is usually defined at the classroom-level of analysis and has not previously been integrated with attachment, dynamic systems, or bio-ecological theories.

PUTTING SOCIAL-COGNITIVE THEORY INTO PRACTICE

The current dissertation may yield some important insights into how teachers can be assisted in their quest to deal with a variety of students with different behaviors, needs, and (dis)abilities. First, teachers ought to be made aware of the potential influence their capability beliefs may have on their students. Findings from forty years of research on TSE suggest that teachers' sense of self-efficacy, at least at the *classroom-level*, may essentially be intertwined with their teaching behaviors and practices in class and, as such, affect their students' academic adjustment. Moreover, at the *student-specific level*, it has been suggested that TSE may change the quality of teachers' relationships with individual (disruptive) students in ways that either confirm or disconfirm their capability beliefs toward these children. To be more precise, a

healthy sense of self-efficacy tends to allow teachers to get into “yes mode”. Such optimistic feelings may help them create supportive learning environments that are more in tune with students’ social, affective, and academic needs. Negative self-efficacy beliefs, however, may stymie teachers’ effective practices in class, block their flow of positive thoughts, and ultimately, hamper students’ motivation for their schoolwork and academic performance. This may be especially true for disruptive students, toward whom teachers generally feel the least efficacious. Helping teachers to be aware of, and reflect on their behaviors and feelings toward particular students may therefore be a first step forward in the process of increasing their self-efficacy. To facilitate such a reflective process, the relationship-focused reflection program of Spilt, Koomen, Thijs, and van der Leij (2012) may be a particularly helpful tool.

Relatedly, the domain- and student-specific nature of teachers’ self-efficacy judgments underscores the importance of ascertaining in which cases such capability beliefs may be particularly problematic and therefore require intervention. Thus far, teachers seem to experience the lowest levels of self-efficacy for behavior management in relation to students who display disruptive, externalizing behavior, and the lowest levels of self-efficacy for emotional support toward internalizing students. These findings, though preliminary, align well with a recent Dutch report on appropriate education (Smeets, Ledoux, Regtvoort, Felix, & Mol Lous, 2015), in which two third of Dutch elementary school teachers expresses a need for further skill development in areas of interpersonal teaching and dealing with challenging student behavior. Accordingly, training and development programs for preservice and inservice teachers should incorporate more strategies teachers might use to bolster their skills in these domains, such as anticipating problems, setting consistent expectations for student behavior, providing clear routines, and engaging more in social conversations with individual students (cf. Hamre et al., 2014). At the same time, it is worthwhile to replicate and extend the current findings focusing on TSE in relation to students who differ in ability, motivation, and educational needs. Such research may shed further light on the processes by which a diverse student population may shape their teachers’ sense of student-specific self-efficacy in different teaching domains. This information can be used to identify further training needs among elementary school teachers.

Lastly, the high correlations among the domains of student-specific TSE give some reason to believe that teachers, next to more generic teaching skills and capabilities, may develop various instructional, behavioral, and affective subskills specific to *individual* students. If this is the case,

then educational researchers and school psychologists should work to identify both the content of, and possible deficiencies in such student-specific skills and capabilities to develop coaching programs that are specifically tailored to teachers' problems and needs with regard to individual students. Such programs may help them better deal with difficult students in class and, in turn, develop a healthier sense of efficacy toward these students and potentially, toward the class as a whole.

CONCLUDING REMARKS

Research on teacher self-efficacy continues to be a vibrant and productive field of study. As has been noted throughout this dissertation, there has been a steady increase of studies examining the nature, measurement, sources, and consequences of TSE over the past forty years. These studies have produced new insights demonstrating that teachers' sense of self-efficacy, at least at the classroom-level of analysis, may set the tone for a high-quality classroom environment, may play a role in their students' academic performance and motivation for their schoolwork, and might affect their own sense of well-being in class. At the same time, however, this body of work has raised many new challenges in the study of TSE that need to be addressed if the field is to evolve over the next couple of years in ways benefiting both theory and practice.

In this dissertation, therefore, we have taken stock of the current state of theory and research on TSE and aimed to address several challenges the field is currently facing by taking teachers' self-efficacy beliefs to the student-specific level. This refinement and extension of Bandura's original ideas enabled us, first, to provide a new benchmark for how the teacher self-efficacy construct could be operationalized – as a personal belief of capability tailored to various domains of teaching and learning, as well as individual students. Directly associated with this benchmark is our newly developed, multifactorial instrument, which may capture variation in teachers' sense of self-efficacy across teaching domains and individual students. Hopefully, this measure of self-efficacy may contribute to more adequate analyses of TSE in future years and generate more comparable results that are less difficult to interpret.

Taking teacher' sense of self-efficacy to the student-specific level may, in part, also address challenges regarding the sources and underlying processes of TSE. Contrary to the modest or non-significant results of prior research on the sources of TSE (e.g., Ruble, Usher, & McGrew,

2011; Tschannen-Moran & Woolfolk Hoy, 2007), this dissertation provided evidence that individual students' social-emotional behaviors in class serve as relatively strong predictors of student-specific TSE, and disruptive behavior in particular. Moreover, teachers' perceptions of conflict and closeness in the student–teacher relationship each appear to play a different role in the development of teachers' sense of self-efficacy toward disruptive students in various teaching domains. Although these findings are preliminary, they seem to underscore a need to integrate social-cognitive insights with theoretical perspectives on student–teacher relationships, including attachment, dynamic systems, and self-determination theories. On a more practical note, this evidence also calls for a need to set up (intervention) studies that examine how teachers' sense of self-efficacy toward and their affective relationships with difficult children affect one another in a reciprocal fashion.

Overall, the current studies on student-specific teacher self-efficacy may hold some promise for the future. Yet, much more has to be done to further define and move the field forward on this front. In our view, this will be an important challenge in the study of teacher self-efficacy for the years to come.