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EXPLAINING THE CONTEXT-SPECIFICITY OF STUDENT MOTIVATION

A Self-Determination Theory Approach

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Abstract

Self-Determination Theory (SDT) is a theoretical framework that is useful for explaining students' behaviours, motivations, and academic outcomes in educational settings. We highlight the main premises of SDT and clarify how the context-specificity of student motivation can be explained using the Hierarchical Model of Intrinsic and Extrinsic Motivation (HMIEM). We review findings from SDT research on within-subject processes underlying students' motivation and academic outcomes, and on between-subject differences in student motivation. Moreover, we draw attention to critical areas for future research on the context-specificity of motivation in educational settings.

The Main Premises of Self-Determination Theory

The Self-Determination Theory (SDT; e.g. Deci & Ryan, 1985) is a theoretical framework that evolved out of the Cognitive Evaluation Theory (CET), which aimed to explain individuals' intrinsic motivation (i.e. "the motivation to engage in an activity out of interest and enjoyment," Reeve & Cheon, 2021, *p.* 57) and its antecedents (e.g. Gagné et al., 2018). SDT defines universal mechanisms that can be used to describe people's motivation, its underlying factors and consequences across domains and life contexts (e.g. Vallerand et al., 2008) in six mini-theories (e.g. Gagné et al., 2018). In SDT's meta-theory, the *self* has the vital role in *determining* how external (e.g. teacher support) or internal (particularly psychological needs) stimuli are regulated to achieve well-being and other positive outcomes (Ryan & Deci, 2019). In this chapter, we aim to address the utility of SDT for explaining the context-specificity of motivational and emotional processes in the learning context,

focusing on two mini-theories, the Organismic Integration Theory (OIT) and Basic Psychological Need Theory (BPNT).

The premises of SDT have been confirmed in educational research in numerous educational contexts and different age groups, such as elementary and middle school students (Conesa et al., 2022). Several reviews and meta-analyses summarise the main findings on student motivation (Howard et al., 2021) and its antecedents (Bureau et al., 2022).

SDT's mini-theory OIT conceptualises distinct types of motivation arranged on a continuum, which define the regulation styles driving specific actions. *Intrinsic motivation* refers to doing a task out of the enjoyment derived from engaging in the task (e.g. Reeve & Cheon, 2021). *Extrinsic motivation* relates to feelings of obligation, contingent self-worth or external outcomes. If a person's behaviour is extrinsically motivated, the aim is to achieve a reward or avoid an undesired outcome through performing the activity (Ryan & Deci, 2000). If individuals realise that external pressures, norms or values correspond with their own personal values and goals, extrinsic reasons can be more or less internalised. If individuals execute a task for an outcome but perceive the value of the task or the outcome to be fully in line with their sense of self, their extrinsic motivation is described as *integrated regulation*. If individuals can identify with the value of an activity and adopt external reasons for performing it as personally relevant, their regulation style is defined as *identified regulation* (e.g. Ryan & Deci, 2000). Behaviours can also be enacted to meet internal pressures concerning self-evaluation, perceived guilt or self-esteem, which reflects (partially internalised) introjected motivation; introjected motivation can be further differentiated into *positive introjection* (undertaking a behaviour out of approach motivation to achieve a certain outcome) and *negative introjection* (undertaking a behaviour out of avoidance motivation to avoid a certain outcome) (e.g. Sheldon et al., 2017). Finally, if behaviours are performed to receive rewards or avoid punishment, they are categorised as *external regulation* (Sheldon et al., 2017). By contrast, amotivation reflects a state of not knowing the reasons and consequences of actions, or having no reason to execute them (e.g. Deci & Ryan, 1985).

SDT research distinguishes between controlled and autonomous motivation: extrinsic and introjected regulation are mainly reflecting external forces; consequently, they have been labelled as controlled motivation (e.g. Sheldon et al., 2017). Autonomous motivation is used as an umbrella term for identified, integrated regulation and intrinsic motivation because these motivations are more strongly determined by internal forces like voluntary choices, or self-related (or self-determined) ones (Sheldon et al., 2017).

SDT postulates that the process of internalisation reflects people's motivation to grow and achieve (Stone et al., 2009). The BPNT explains how internationalisation depends on three universal and basic psychological needs (e.g. Deci & Ryan, 1985): Competence (the need to feel capable), relatedness

(the need to be connected to other people and belong), and autonomy (the need to be free from control and have optional choices; Assor, 2012). Psychological needs can be defined "as experiential outcomes that are affected by contexts (…) [and as] internal motives that can direct behaviour" (Sheldon & Gunz, 2009, p. 1468) and motivation. Namely, the satisfaction of the needs for autonomy, competence and relatedness can influence the degree to which extrinsically motivated behaviours can become internalised to self-relevant (identified) or fully accepted (integrated) behaviours (e.g. Sheldon et al., 2017). By contrast, the frustration of these psychological needs (feeling controlled, like a failure, or excluded) would lead to disengagement and ill-being (e.g. Vansteenkiste & Ryan, 2013).

Explaining the Context-Specificity of Student Motivation: The Hierarchical Model of Intrinsic and Extrinsic Motivation

In this chapter, we focus on the question how SDT can help to understand the context-specificity of student motivation and factors underlying the stability and variability of student motivation, such as students' need satisfaction and teachers' need support. Motivation is assumed to have an "open architecture" (Reeve, 2016, p. 32) and can be changed through the context or situation. The Hierarchical Model of Intrinsic and Extrinsic Motivation (HMIEM) proposed by Vallerand (1997), in which intrinsic motivation and extrinsic motivation are conceptualised at a global, contextual, and a situational level, helps to explain how student motivation is affected by context-specific factors, such as teacher behaviours (see Figure 4.1). More specifically, motivation at the global level is proposed to represent a general motivational orientation, or a trait (Vallerand, 1997), reflecting a general motivational tendency (see DeCharms, 1968). Global motivation is supposed to be mainly affected by global factors, such as cultural values (Chanal & Guay, 2015), and is socialised by out-of-school factors. Motivation at the contextual level is conceptualised to refer to the motivation in a specific context, such as the academic domain (Vallerand, 1997). Motivation at the situational level refers to the motivation in a specific activity of the domain (Chanal & Guay, 2015). Therefore, students' situational motivation, for example in a specific lesson, can be affected by situational factors, such as lesson-specific need support. School subjects, allocated at a lower level of generality than the overall academic domain, may be best categorised at an intermediate level, in between the contextual and situational level, or at the situational level (Paumier & Chanal, 2018). The HMIEM, based on SDT, is useful for explaining students' behaviours, motivations, as well as further antecedents and outcomes in a specific environment. External incentives, such as performing well in school, might be driving factors at a higher conceptual level than intrinsic stimuli, as their appeal can operate across different
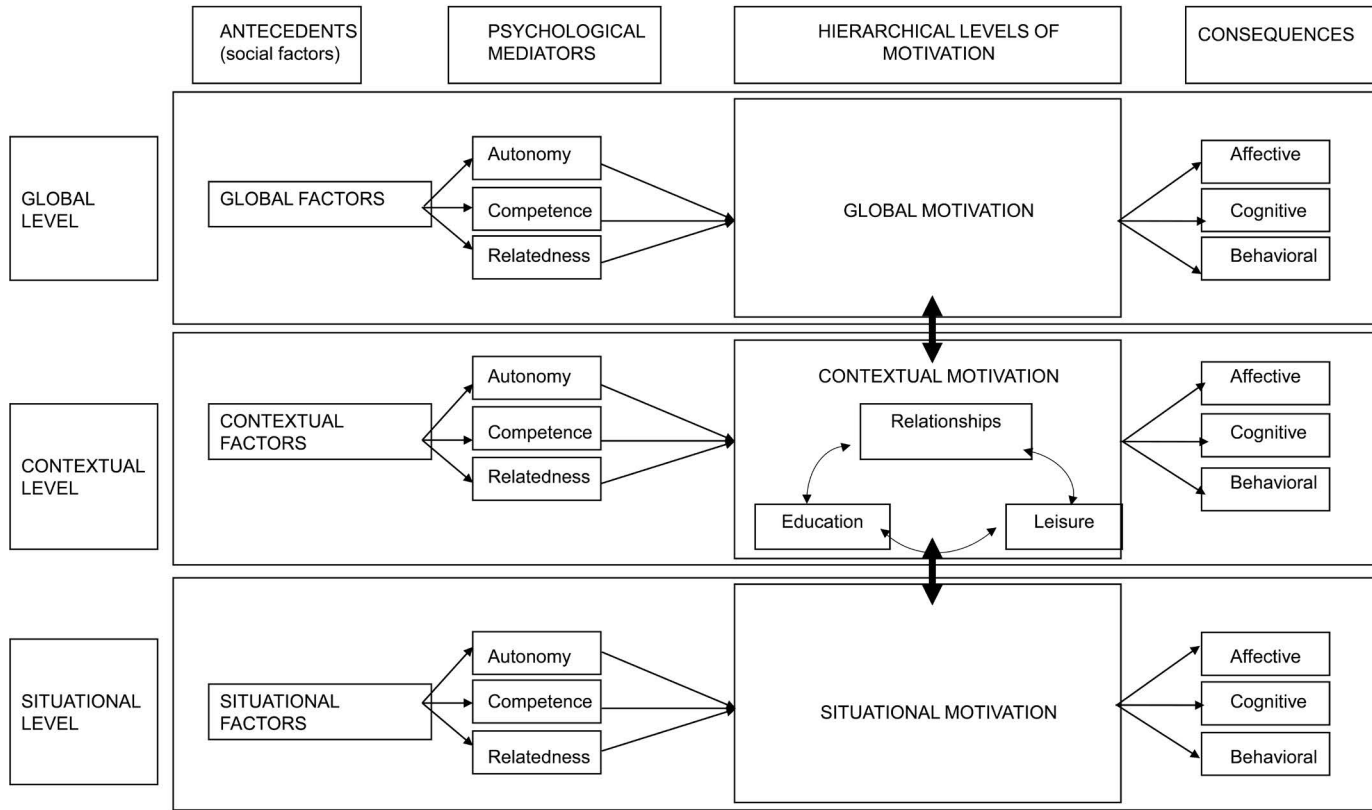
| ANTECEDENTS (social factors) | PSYCHOLOGICAL MEDIATORS | HIERARCHICAL LEVELS OF MOTIVATION | CONSEQUENCES |

GLOBAL LEVEL

GLOBAL FACTORS → Autonomy / Competence / Relatedness → GLOBAL MOTIVATION → Affective / Cognitive / Behavioral

CONTEXTUAL LEVEL

CONTEXTUAL FACTORS → Autonomy / Competence / Relatedness → CONTEXTUAL MOTIVATION (Relationships / Education / Leisure) → Affective / Cognitive / Behavioral

SITUATIONAL LEVEL

SITUATIONAL FACTORS → Autonomy / Competence / Relatedness → SITUATIONAL MOTIVATION → Affective / Cognitive / Behavioral

FIGURE 4.1 The Hierarchical Model of Motivation

contexts and situations. Because characteristics of activities can trigger intrinsic stimuli, intrinsic motivation may depend more on situational factors than extrinsic motivation. The HMIEM (Vallerand, 1997) claims a motivational sequence (*antecedents → motivations → outcomes)* of *antecedents* (social or intra-personal characteristics) underlying *motivation* that drives affective, cognitive, and behavioural *consequences*.

Antecedents → Motivations

There is a large body of evidence that underlines the effectiveness of need support in predicting intrinsic motivation and further outcomes (see reviews by Núñez & León, 2015; Su & Reeve, 2011). In educational research, autonomy support has received widespread attention, for example because educational contexts impose behavioural limits that have to be followed and students' need for autonomy can easily be frustrated.

Several autonomy-supportive practices can be used (e.g. Reeve & Cheon, 2021), such as offering options or providing rationales, which implies explaining the relevance of a task or a rule (Su & Reeve, 2011), or the meaning of the content of a task, for example, for future life plans. Acknowledging students' emotions and accepting their frustration is another autonomy-supportive strategy (Su & Reeve, 2011). Moreover, students' autonomy is supported if their interests are stimulated, for example, by creating interesting materials (Su & Reeve, 2011). Teachers' behaviours can also affect students' need for competence and relatedness. In a Delphi study (Ahmadi et al., 2023), an expert panel of international scholars highlighted 57 motivational behaviours that teachers can apply. Out of these behaviours, 35 are assumed to satisfy students' needs for autonomy, competence, and relatedness, and 22 instructional styles to potentially thwart the three psychological needs.

Findings from studies in lower and higher secondary education show that students' motivation is closely intertwined with their achievement emotions (e.g. Sutter-Brandenberger et al., 2018). Accordingly, achievement emotions are often conceptualised as central antecedents of students' motivation (e.g. Pekrun & Perry, 2014). Emotions can be characterised as affective episodes (Mulligan & Scherer, 2012) which "signal the relevance and meaning of events relative to a person's needs, aims, or goals" (Roth et al., 2019, p. 2). Achievement emotions are positive or negative, activating (e.g. joy) or deactivating (e.g. boredom) emotions referring to learning activities or achievement outcomes (Pekrun & Perry, 2014).

Achievement emotions and motivation might also affect each other bidirectionally and reciprocally, which implies that students' motivation could underlie their achievement emotions. Accordingly, in a recent meta-analysis considering student samples from different age groups (Howard et al., 2021), anxiety, boredom, negative and positive affect, as well as enjoyment were defined as adaptive and maladaptive well-being outcomes of distinct

motivation types. It needs to be kept in mind that "emotion can comprise motivation, and motivation can comprise emotion, then there is construct overlap, and measures of emotion and motivation may overlap as well" (Pekrun & Marsh, 2022, p. 3). Thus, it might be a relevant question for future research whether and how motivations and emotions can be empirically distinguished.

Another important consideration is that not all emotions may be easily malleable by teachers. In a sample with Dutch secondary students and their teachers, Flunger et al. (2022, Supplementary Material, Table S7) revealed that students' perceptions of teachers' lesson-specific autonomy support had no statistically significant association with their lesson-specific anxiety. However, for example in lessons in which German teachers self-reported to have provided rationales, students reported less lesson-specific anxiety. By contrast, German teachers' self-reported acknowledgement of students' emotions and feelings or perceived relatedness with the class was positively associated with students' lesson-specific anxiety in German. More research is needed if and how teachers can support distinct negative emotions in their students.

Motivation → Outcomes

Concerning subject-specific motivation, intrinsic motivation and identified regulation have been identified in several studies as having strong positive associations with academic achievement, persistence, well-being, and self-evaluation concerns (see Howard et al., 2021). Diverging results on the associations between different types of motivation and academic achievement (for an overview, see Chanal & Paumier, 2020) may result from (a) the neglect of the consideration of the hierarchical level considered (situational, contextual, or global), (b) how motivation was measured and/or modelled (e.g. as a composite score), or (c) how academic achievement was assessed (a test score, grades or more complex skills and knowledge). For example, Lohbeck et al. (2022) found that German children characterised by high intrinsic motivation and identified regulation outperformed their peers with relatively lower intrinsic motivation and identified regulation in a set of motor-skills tests.

Stability of Findings across Contexts and the Role of Psychological Needs

A plethora of studies confirms the theoretical premises of SDT in different contexts and age groups. The consistency of findings can be interpreted as validating the theory's claims on universal processes (e.g. Vallerand et al., 2008). For example, distance learning, which, for example was necessary due to the COVID-19 pandemic, might negatively affect need satisfaction and intrinsic motivation. Empirical findings from multi-country studies suggest that generally high need satisfaction might buffer against a negative trend

in academic outcomes (e.g. Holzer et al., 2021). An educational implication would be to incorporate tools that allow for interaction also in digital learning situations (Holzer et al., 2021) or create opportunities for challenges to promote the satisfaction of distinct psychological needs.

That is, if motivational support is provided and students' psychological needs are satisfied, students on average may benefit from it in terms of higher interest and positive emotions (e.g. Flunger et al., 2019). However, offering motivational support that is appropriate in terms of content may be more difficult in some school subjects. For instance, Math teachers might find it hard to provide meaningful rationales for the relevance of the content for students' lives (e.g. Gainsburg, 2008). Accordingly, between-subject differences in the mean levels of student motivation have been revealed in middle and high school students (e.g. Gaspard et al., 2017).

Students from different age groups tend to report lower motivation for subjects with (relative to other subjects) higher task difficulty, such as mathematics (Baten et al., 2020) or physics (Gaspard et al., 2017). Conforming to SDT, the more difficult subjects may frustrate students' psychological need for competence, which is a driving factor of students' intrinsic motivation (Vansteenkiste & Ryan, 2013). In several meta-analyses in the physical education setting, competence need satisfaction was shown to have stronger associations with intrinsic and identified motivation than autonomy need satisfaction (Bureau et al., 2022; Vasconcellos et al., 2020). This was also confirmed in mathematics, in a study with Dutch elementary school students, in which competence need satisfaction was more strongly associated with intrinsic motivation than autonomy need satisfaction (Baten et al., 2020). Moreover, in the school subject physics, secondary school students' situational interest was shown to depend on their need for competence (Flunger et al., 2013). It can seem as if these findings highlight that the need for competence is the key predictor of student motivation in educational settings, and if students perceive that their need for competence is thwarted, lower intrinsic motivation is the consequence.

However, in a review on the role of the three basic psychological needs in elementary and middle school students, it was revealed that competence need satisfaction did not consistently show stronger associations with outcomes than autonomy and/or relatedness satisfaction in all studies (Conesa et al., 2022). For example, in a study with Japanese elementary school students learning English, Carreira et al. (2013) found that autonomy need satisfaction had somewhat stronger associations with intrinsic motivation than competence and relatedness need satisfaction. And, in case teachers provide autonomy support, it has been shown to be effective in promoting student motivation and engagement also in the subjects characterised by high task difficulty, such as physics (Flunger et al., 2019). Consequently, the negative associations of task difficulty with students' motivation can be weakened

by teachers' need support (e.g. in mathematics, Baten et al., 2020). In line with these findings, in a sample of German secondary school students, Tsai et al. (2008) showed that teachers' lesson-specific autonomy support was associated with students' experienced interest in German, a second language (English), and Math lessons. Likewise, Flunger et al. (2022) confirmed the associations of different autonomy-supportive strategies with different student outcomes in both a second language (German) and mathematics.

Finally, it is noteworthy that reviews and meta-analyses align in demonstrating that relatedness need satisfaction is less strongly associated with student motivation than autonomy and competence need satisfaction in distinct subjects (Bureau et al., 2022; Conesa et al., 2022; Vasconcellos et al., 2020). The relative weaker associations of students' relatedness need satisfaction with their outcomes has been attributed to the primary importance of achievement in the education context (Niemiec & Ryan, 2009). In a study with secondary school students from Singapore, Wang et al. (2019) found that relatedness need satisfaction (e.g. "In this class I feel valued/listened to") was more positively associated with autonomous motivation and more negatively associated with controlled motivation than autonomy and competence need satisfaction. Wang et al. (2019) targeted the classroom in their measures, which can reflect an overall assessment of relatedness need satisfaction with classmates, a teacher, or even several teachers. Thus, it is important to clarify which reference group and level is targeted when measuring student motivation and need satisfaction (individual students versus whole class, situational, contextual, or global), in order to understand the (inconsistent) meaning of findings in school research.

Within a classroom, the distinct types of motivation, needs, and achievement emotions are not exhibited by all students to the same degree. Therefore, it is a critical question whether the effectiveness of teachers' need support is conditional on student characteristics or other classroom-specific factors. It is important to note that the findings on differential effects of motivational support depend on the moderator considered. If students come from families in which parents have low interest in math, relevance instruction in the classroom can provide them with novel information on the importance of the learning material, and the applicability of the content taught ("Robin Hood effects"; Häfner et al., 2017). Concerning students' personal characteristics, such as their prior motivation and grades, few differential effects of autonomy support or need satisfaction have been identified. In case two-way interactions are confirmed, findings corroborate so-called "Matthew-effects" implying that students with higher need strength (Flunger et al., 2013; Katz et al., 2009), higher general autonomy need satisfaction and higher grades (e.g. Flunger et al., 2019) or with higher initial motivation (Flunger et al., 2022), can benefit more from need satisfaction or autonomy support than students with lower need strength, motivation and lower grades, respectively.

However, a motivational intervention may be less effective for extreme values of a construct. Mayer et al. (2017) showed that when analysing two-way interactions, self-efficacy was no significant moderator of the effects of an autonomy-supportive intervention on students' boredom. When a quadratic term was added to the interaction analysis, the autonomy-supportive intervention was revealed to be most effective in reducing boredom for medium values of self-efficacy. Thus, the interplay of constructs can be more complex and solely analysing two-way interactions might fail to fully uncover differential effects.

Between-Subject Differentiation in Student Motivation: The School-Subject-Specificity Hypothesis

SDT, and particularly the HMIEM, have great potential when examining subject-specific (i.e. situational) differences in students' motivation (see Chanal & Paumier, 2020). Unexpectedly, in a study with French-Canadian children, Guay et al. (2010) showed that the correlations between the intrinsic motivations for three school subjects (mathematics, reading, and writing) were lower than those among identified motivations, whereas the correlations between controlled motivations for mathematics, reading and writing were higher than the correlations found for identified motivation. Likewise, Guay and Bureau (2018) found that introjected regulation and external regulation showed high intercorrelations across Math, French, and English. Therefore, the degree to which student motivation is determined by internal or external forces, compared to the inherent characteristics of the activity (i.e. fully self-determined, intrinsic motivation), may determine how differentiated motivation is across school subjects. According to the school-subject-specificity hypothesis (Chanal & Guay, 2015), the more trait-like (e.g. influential across various activities) the impulse that regulates motivation is, the less domain-specific and situational is the resulting motivation (Chanal & Paumier, 2020). Therefore, introjected regulation should be less differentiated than identified regulation, which should be less differentiated than intrinsic motivation since these regulations would be less specific to the school subject, situational level (cf. Chanal & Paumier, 2020). And indeed, Chanal and Paumier (2020) confirmed that controlled motivation in a given school subject was more strongly related to a global trait than autonomous motivation, which was found to be more strongly bound to school-subject-specific outcomes (the situational level). When testing the motivational sequence in a sample of Swiss university students, regarding the link antecedent → motivations, Paumier and Chanal (2022) confirmed that students' perceptions of their professors' autonomy support were positively associated with types of autonomous motivation in corresponding courses (statistics and social psychology), but mostly not with controlled motivation. Concerning motivations → outcomes, autonomous types of motivation had more

significant associations with achievement emotions than controlled types of motivation in corresponding courses (regarding statistics, social, and clinical psychology).

In sum, using the HMIEM (Vallerand, 1997) can help to better detail the differences in student motivation regarding a trait-like (global), school-specific versus non-academic (contextual), or a school-subject-specific intermediate or situational level.

Future Directions for Studying Context-Specific Processes Using SDT

The objective of this chapter was to give a brief overview on the main premises of Self-Determination Theory and its applications in the academic domain in order to explain antecedents and consequences of distinct types of students' motivation and achievement emotions. Finally, we seek to summarise empirical findings that enable to derive some potentially fruitful avenues for future research when aiming for greater context-specificity in SDT-based educational research. In the following, we draw attention to topics, which we believe are critical areas for future research on the context-specificity of SDT in educational settings.

Distinguishing between Context-Specific and Context-General Constructs

When summarising the literature, it becomes clear that, as Pekrun and Marsh (2022) highlighted, there may be a need to distinguish between context-specific and context-general constructs. For example, the relative effectiveness of the satisfaction of the three distinct psychological needs may depend on context-specific processes. That is, prior evidence suggests that teachers might have greater impact on satisfying or frustrating students' need for autonomy and competence while peers may have stronger influence on students' feelings of relatedness (Vasconcellos et al., 2020).

Moreover, intrinsic and identified motivation may be more context-specific, whereas introjected and external regulation may reflect more context-general constructs. A study with French-Canadian high school students by Guay and Bureau (2018) in French, Math, and English revealed that subject-specific intrinsic motivation was positively associated with grades in the same subject (in French and English) but not with intrinsic motivation for the other school subjects. By comparison, subject-specific external regulation was negatively associated with grades in all three school subjects, and introjected motivation in Math and English also was negatively associated with academic achievement in French, Math, and English. Guay and Bureau (2018) explained these findings with the assumption that the underlying

proximal relationships that are tied to a given school subject, particularly teachers' behaviours, might be relatively stronger associated with students' intrinsic motivation and identified motivation than with the more controlled types of motivation. Both intrinsic and identified motivations are supposed to be regulated by classroom processes at the situational level, for example teachers' need support. By contrast, introjected and external regulations might be influenced by processes and relationships that are not subject-specific, such as need support by parents or friends (see also findings by Paumier & Chanal, 2022; with a sample of Swiss university students).

Consequently, the distinction between context-specific and context-general constructs has great potential for future research to help explain which factors drive classroom processes in distinct school subjects and why some outcomes (e.g. anxiety or feelings of belonging in a class) are less strongly influenced by teacher behaviour. This could enable future research to shed light on inconsistent findings concerning the situatedness and context-specificity of SDT.

Considering the Multi-Level Classroom Context

In the classroom context, teachers can either provide need support to the whole class, for example, through preparing need-supportive materials for the whole class (e.g. Patall et al., 2013), or they can address individual students (see e.g. Skinner & Belmont, 1993), for instance by explaining why learning a specific topic is relevant for the future plans of a student. Therefore, students' motivations, and emotions as well as teachers' need support, can both refer to an individual-level (student) and a group-level (study group or class) construct. Flunger et al. (2023) found that this "us/class" versus "me/I" distinction can matter for elementary school students' perception of their teachers' autonomy support: Teachers' autonomy support directed at students or at the whole class could be distinguished in student perceptions as two distinct approaches regarding several autonomy-supportive strategies.

Both class-directed and individual autonomy support may contribute to an overall autonomy-supportive atmosphere (a class-level construct, Flunger et al., 2023). If multiple teachers instruct students, it is likely that the need-supportive climate in a classroom is affected by several teachers' instructional styles, and the whole-class motivation and emotions may be affected by the overall support that a class receives by different teachers in distinct school subjects.

However, students can perceive to be treated unequally by the teacher relative to classmates, and this perceived relative lack of autonomy support may be positively associated with extrinsic regulation (Flunger et al., 2023). Thus, there seem to be conceptual differences between class-directed and individual support, and perceptions of (un-)equal autonomy support (e.g. Chatzisarantis et al., 2019). Therefore, it seems advisable for researchers interested in classroom processes to measure need support at the respective level they are interested in.

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