



Longitudinal relations between perceived autonomy and social support from teachers and students' self-regulated learning and achievement



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ARTICLE INFO

Article history:

Received 31 May 2014

Received in revised form 29 January 2016

Accepted 16 May 2016

Available online xxxx

Keywords:

Self-regulated learning
Perceived teacher support
Reciprocal relations
Student motivation
Learning environment
Self-determination theory

ABSTRACT

Most research investigating the relation between perceived teacher support and self-regulated learning (SRL) is cross-sectional, and little is known about the direction of the effects. This longitudinal study investigated the direction of the effects between students' perceptions of autonomy support and social support from teacher on two behavioural aspects of SRL: delay of gratification and metacognitive strategy use. A second aim was to investigate the extent to which the effects of perceived teacher support on student achievement were mediated by SRL. Students ($N = 701$, age 12) completed questionnaires five times during their first 2 years in secondary education. Cross-lagged autoregressive models revealed small reciprocal effects in both directions between delay of gratification and perceived autonomy support. Metacognitive strategy use predicted perceived autonomy support and perceived social support from teachers predicted both aspects of SRL. The study revealed a small mediating effect from SRL between perceived teacher support and achievement.

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1. Introduction

How can teachers promote student motivation and achievement in school? Self-determination theory (SDT; Deci & Ryan, 2000) maintains that learning environments that support students' basic psychological needs for autonomy, competence and relatedness facilitate students' self-regulated learning (SRL) and indirectly promote students' academic achievement. Teachers play an important role in providing a learning environment that supports students' basic needs to become motivated and engage in self-regulated learning (SRL). Many studies in the field of education have demonstrated that students' perceptions of their teachers' need supportive behaviour is related to students' motivation (Stroet, Opdenakker, & Minnaert, 2013). Most studies investigating teachers' support of students' basic needs have focused on perceived autonomy support (e.g. Assor, Kaplan, & Roth, 2002; Van Grinsven & Tillema, 2006). Teachers support students' need for autonomy when they create a learning environment in which students feel that they can act according to their own interests. Other studies have focused on the effects of students' perceptions of teachers' social support (i.e. expressing involvement and interest in students' wellbeing in school) on student motivation and performance in school (e.g., Skinner & Belmont, 1993; Van Ryzin, Gravelly, & Roseth, 2009). Relatively few studies, however, have specifically focused on SRL and the relation with perceived teacher support (e.g. Sierens, Vansteenkiste, Goossens, Soenens, & Dochy, 2009; Van Grinsven & Tillema, 2006). Most of the

studies investigating the effects of perceived teacher support on student motivation and performance in school are cross-sectional. However, reliance on a single measurement precludes conclusions about the causality of the relation. In line with SDT, it is usually assumed that perceived teacher support has a causal effect on students' SRL and, consequently, student achievement. However, there are indications that the relation is reciprocal and that students' SRL also has an effect on perceived teacher support (Skinner & Belmont, 1993). Longitudinal studies are necessary to shed more light on the relation between perceived teacher support, SRL and achievement. In particular, time-lagged effects in a longitudinal design can provide information about the direction of the effects. It is regrettable that there are almost no longitudinal studies on the relation between perceived teacher support and learning outcomes (Stroet et al., 2013). In this study, we investigated the longitudinal relations among perceived teacher support, SRL and achievement using cross-lagged autoregressive models estimated with the use of structural equation modelling (SEM). The first aim of this study was to provide more information on the direction of the effects between students' perceptions of their teachers' autonomy support and social support, on the one hand, and students' SRL, on the other. In addition, we investigated the extent to which the longitudinal effects of perceived teacher support on students' academic achievement in school were mediated by SRL.

2. Self-regulated learning

Several models of SRL have been proposed in educational research. Although each model accentuates different aspects of SRL, most models share certain basic assumptions (Boekaerts & Corno, 2005; Pintrich,

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2004; Puustinen & Pulkkinen, 2001). Generally, SRL refers to the adaptation of thoughts, feelings and behaviour to affect learning and motivation. Self-regulated learners control their own learning processes and direct cognitive, behavioural and motivational processes to achieve self-set learning goals (Boekaerts & Cascallar, 2006; Pintrich, 2004). SRL has been found to be an important predictor for academic achievement in school (Pintrich & de Groot, 1990). Most models distinguish at least three phases in self-regulated learning (Puustinen & Pulkkinen, 2001). The first phase, the preparatory or forethought phase, precedes a performance phase in which students actually work on the learning task. In the final phase students evaluate and reflect on the learning process. Most models describe self-regulated learning as a cyclical process, i.e., attributions formed in the reflection phase may influence subsequent preparatory processes. SRL refers to the controlling of cognitive processes such as setting goals for learning, motivational processes such as motivational beliefs and the regulation of learning behaviour. In this study we focused on two aspects of SRL that are present in most models of SRL (Van der Veen & Peetsma, 2009) but have received less attention in relation to teacher support (see Stroet et al., 2013): Delay of gratification and the use of metacognitive strategies. Delay of gratification (Bembenutty & Karabenick, 2004) refers to the extent to which students are able to set aside distractions in favour of academic learning. Getting started and remaining engaged in a task require students to avoid other attractive alternatives. Students who are able to delay gratification are more likely to start and complete academic tasks. This aspect of SRL is closely related to concepts of behavioural engagement (e.g., Skinner, Kindermann, & Furrer, 2009). The second aspect of SRL on which this study is focused is the use of metacognitive strategies including planning, monitoring and evaluation of learning activities (Pintrich & De Groot, 1990; Zimmerman, 2000). For easy reference, in this article the term SRL was used to refer to these two aspects of SRL.

3. Autonomy support and social support from teachers

SDT assumes that people are by nature intrinsically motivated (Deci & Ryan, 2000). Satisfaction of people's basic psychological need for autonomy, competence and relatedness facilitates proactive and intrinsically motivated behaviour, whereas the frustration of these needs may lead to passivity and maladaptive behaviour (Vansteenkiste & Ryan, 2013). This means that the satisfaction of these basic needs becomes a necessary condition for students to become engaged learners and the support of students' basic needs in school is assumed to contribute to students' motivation and internally regulated learning behaviour. In this study we focus on students' perceptions of their teachers' supportive behaviour with regard to their basic need for autonomy and relatedness. The need for autonomy refers to people's need to act in accordance with their sense of self. When people feel autonomous, they experience their behaviour as self-determined and consistent with their interests, values and their own personal goals. This experience of volition and a sense of internal locus of control is necessary for students to become motivated and engaged learners (Reeve, Nix, & Hamm, 2003). Without support of autonomy students' learning is assumed to lack personal interest, task involvement and self-initiative that are necessary for SRL (Reeve, 2009). Teachers can support students' autonomy by allowing them to act in accordance with their personal interests and values (Reeve, 2009). Autonomy support includes providing students with options and choices and creating space for self-initiative (Reeve & Jang, 2006). Within SDT, autonomy support is understood as more than providing freedom and choices. From the perspective of SDT, feeling autonomous is not necessarily the same as having self-control (Vansteenkiste et al., 2012). Teachers can also support students' sense of autonomy by explaining the meaning and relevance of the material to be learned. When students perceive learning for school as contributing to the realisation of their own personal goals and needs, they feel they act according to their own interests and values (Assor et al., 2002). Therefore, it is important for teachers to emphasise the relevance of learning tasks and to provide students with a

rationale when choices are constrained (Assor et al., 2002). Teachers can also make learning tasks more relevant for students by helping students to connect what has to be learned with what they already know (Thoonen, Slegers, Peetsma, & Oort, 2011).

Another important aspect of teacher support concerns teachers' involvement with students (Skinner & Belmont, 1993; Van Ryzin, 2011). Teachers' social support is important for students' need for relatedness (Deci & Ryan, 2000). SDT assumes that students' need to feel connected to others and to maintain caring relations with others. Teachers can support these needs by expressing their involvement and interest in students' wellbeing in school (Roorda, Koomen, Spilt, & Oort, 2011; Skinner & Belmont, 1993). Teachers' involvement in students can have substantial effect on students' motivational beliefs, such as feelings of competence and interest, and on students' emotions in school, such as enjoyment and anxiety (see Ahmed, Minnaert, Van der Werf & Kuyper, 2010). Social support from teachers can contribute to students' emotional security in school, which is considered to be a necessary condition for exploration of the environment (Roorda et al., 2011). Therefore, it is assumed that teachers' social support can have a positive effect on student motivation and SRL in school.

A large body of research has confirmed the positive relation between teachers' autonomy-supportive and social-supportive behaviour and students' motivation (for an overview of research in secondary education see Stroet et al., 2013). As we have mentioned before, most of these studies are cross-sectional and investigated this relation by examining students' perceptions of teacher support. A number of studies have found positive relations between SRL and perceived autonomy support. Sierens et al. (2009), for example, found that the regulation of cognition (i.e., the use of metacognitive strategies) was positively related to students' perceptions of the extent to which their teachers provided feedback and help in an autonomy-supportive way. In addition, Vansteenkiste et al. (2012) found that perceived autonomy support was positively related to students' learning behaviour, including the use of deep-level learning strategies and persistence during learning. The relation between perceived social support and SRL has also been documented in several studies. Research findings have shown that perceived social support was positively related to students' regulation of cognition (Patrick, Ryan, & Kaplan, 2007; Ryan & Patrick, 2001; Yin, Lee & Zhang, 2009). Other studies found a positive relation between perceived social support from teachers and effort regulation or behavioural engagement (e.g., Murdock & Miller, 2003).

In addition, teacher support has been associated with academic achievement. Autonomy support and social support have been found to improve students' academic performance. Roorda et al. (2011) found in a meta-analysis that positive student-teacher relations were related to achievement in school. This meta-analysis included mostly cross-sectional studies investigating student perceptions, but also some longitudinal studies and studies based on teacher perceptions and observations. Vansteenkiste, Simons, Soenens, & Lens, 2004 conducted three field experiments in which college students received instruction in either an autonomy-supportive or a controlling manner and found significant effects of autonomy-supportive instruction on academic achievement. It is assumed that the effect of teachers' autonomy support and social support on performance is mediated by student motivation and SRL. Vansteenkiste and colleagues indeed found that the effect of autonomy-supportive instruction on performance was mediated by the motivations of students. Likewise, a study by Van Ryzin (2011) in which a combined measure for emotional and behavioural engagement was used, showed that engagement mediated the effect of perceived autonomy support and social support on student achievement in school.

4. Causal direction of effects

As can be concluded from the brief discussion above, the relation between perceived autonomy support and social support and student learning behaviour is well documented. SDT maintains that it is need

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