



A self-determination theory approach to predicting school achievement over time: the unique role of intrinsic motivation

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ABSTRACT

Although many studies have examined the relation of academic motivation to school achievement using the Self-Determination Theory perspective, the results have been inconsistent. The present investigation represents the first systematic attempt to use a meta-analysis and controlled, longitudinal studies to examine the relations of specific types of motivation to overall academic achievement. The meta-analysis (Study 1) pointed toward a potentially important role of intrinsic motivation in predicting school achievement. Three empirical studies of high school and college students in Canada (Studies 2 and 3) and in Sweden (Study 4) showed that intrinsic motivation was the only motivation type to be consistently positively associated with academic achievement over a one-year period, controlling for baseline achievement. Amotivation was significantly associated with lower academic achievement in Studies 3 and 4. Interestingly, intrinsic motivation was also associated with reduced amotivation in two of our studies and it was reciprocally associated with higher school achievement in another study. Overall, our findings highlight the unique importance of intrinsic motivation for the future academic success of high school and college students.

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1. Introduction

Teachers and parents all know that school motivation is crucial for academic success, which has been long known as a determinant for a host of adaptive outcomes such as school completion, career success, mental and physical health (Archambault, Janosz, Morizot, & Pagani, 2009; Guay, Ratelle, & Chanal, 2008). However, there is little agreement regarding which one should be promoted. While some researchers focus on intrinsic motivation as the most important (Deci & Ryan, 2000), others emphasize either extrinsic motivation (Wigfield & Eccles, 2000), or a combination of both intrinsic and extrinsic motivation (Elliot & Moller, 2003; Lepper, Corpus, & Iyengar, 2005). The present investigation examines which types of motivation are most beneficial for academic achieve-

ment, over time, in different school contexts and cultures. It also assesses whether there are reciprocal relations among academic achievement and different motivation types.

1.1. Self-determination theory in education

Self-Determination Theory (SDT; Deci & Ryan, 2000) adopts a multidimensional approach to motivation. It specifies different types of autonomous and controlled forms of intentional action. Autonomous actions are initiated by a sense of choice and personal volition, whereas controlled actions are regulated by external or internal pressures. Individuals who are controlled in their actions have an external locus of causality, whereas those who are autonomous have an internal locus of causality (DeCharms, 1968). Intrinsic motivation is viewed as the prototype of autonomy (Deci & Ryan, 1985, 2000; Lepper, Greene, & Nisbett, 1973). When intrinsically motivated, individuals freely engage in an interesting activity simply for the enjoyment and excitement it brings, rather than to get a reward or to satisfy a constraint (Deci & Ryan, 1985). They perceive themselves as the causal agent of their own behaviour (DeCharms, 1968). By contrast, extrinsic motivation is instrumental in nature. Behaviour

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that is extrinsically motivated is not performed out of interest, but for the consequence it is thought to be instrumentally linked to (Wrzesniewski et al., 2014). Extrinsic motivation is thought to be important for socially prescribed activities, such as doing homework, because they are often not inherently interesting. Unlike many conceptualizations of motivation (e.g., Harter, 1981), SDT does not view extrinsic motivation as one-dimensional and opposed to intrinsic motivation. Instead, it specifies different types of extrinsic motivation, which vary in the extent to which they are autonomous (Deci & Ryan, 1985).

These types, from the least to the most autonomous, consist of external, introjected and identified regulation. External regulation refers to behaviours that are initiated by an external contingency, for example, being offered a reward to do one's homework. Introjected regulation refers to internalizing a regulation without fully accepting it into one's sense of self. It involves feelings of internal coercion and pressure, and refers to attempts to avoid feeling unworthy, guilty or ashamed, or to prove one's worth (Assor, Vansteenkiste, & Kaplan, 2009). An example of introjected regulation would be a student who studies long hours to prove to herself that she is worthy. Identified regulation takes place when the value of an instrumental behaviour has come to be identified with one's sense of self. This type of regulation is considered to be more autonomous than the other types of extrinsic motivation because it is initiated from a sense of personal meaning and volition (Deci & Ryan, 2000; Koestner & Losier, 2002). A student who does extra exercises at the end of a history chapter because she believes it will help her fully understand the subject matter is regulated by identification.¹ SDT also considers amotivation, the absence of motivation that happens when an individual does not experience intentionality or a sense of personal causation. These different forms of motivation have been proposed to lie along a continuum of relative autonomy, starting with the form that exhibits the lowest level to the one that represents the highest level of autonomy (Deci & Ryan, 1985). SDT (Ryan & Connell, 1989) also mentions that, adjacent motivations on the continuum (e.g., intrinsic motivation and identified regulation) should relate more strongly to each other than distal ones (e.g., intrinsic motivation and external regulation). However, evidence for the continuum is inconsistent. While some findings corroborate this pattern, others deviate from it in various ways (e.g., intrinsic motivation being more strongly related to introjected than to identified regulation) (for examples, see Boiché, Sarrazin, Grouzet, Pelletier, & Chanal, 2008; Ntoumanis, 2002; Otis, Grouzet, & Pelletier, 2005; Ratelle, Guay, Vallerand, Larose, & Sénécal, 2007).

1.2. Academic motivation and educational achievement

Although many studies have examined the relation of academic motivation to school achievement from the SDT perspective (e.g., Chatzisarantis, Hagger, Biddle, Smith, & Wang, 2003; Deci, Vallerand, Pelletier, & Ryan, 1991), the majority have been cross-sectional and have yielded inconsistent results (Cokley, Bernard, Cunningham, & Motoike, 2001; D'Ailly, 2003; Fortier, Vallerand, & Guay, 1995;

Grolnick, Ryan, & Deci, 1991; Hardre & Reeve, 2003; Noels, Clement, & Pelletier, 1999; Otis et al., 2005; Petersen, Louw, & Dumont, 2009; Soenens & Vansteenkiste, 2005; Walls & Little, 2005). A careful examination of past research shows that *only a few* studies have adopted a prospective design while also controlling for previous achievement (Baker, 2003; Black & Deci, 2000; Burton, Lydon, D'Alessandro, & Koestner, 2006, Study 2b). The details of these controlled prospective studies merit review. Burton et al. (2006) conducted a 6-week prospective study of university students to examine the relations of intrinsic motivation and identified regulation to final exam performance in a single psychology course. Results showed that, controlling for previous grades, identified regulation significantly positively predicted final examination grades whereas intrinsic motivation was unrelated to the final grades. Black and Deci (2000) examined the relation of relative autonomy in a sample of college chemistry students over a one-semester period. They found that relative autonomy did not significantly predict final course grade, after controlling for previous ability and grade point average (GPA). Results for specific types of motivation were not reported. Finally, Baker (2003) examined the relations of academic motivation types to total GPA in a sample of university students and controlled for academic achievement as measured by entry qualifications upon entering university. Her results showed that intrinsic motivation, assessed during the second semester of the first year of university, was the only type of motivation to significantly predict overall academic performance measured one year later, controlling for entry qualifications.

An example of another longitudinal study that has controlled for baseline achievement is one by (Guay, Ratelle, Roy, & Litalien, 2010). Using a cross-lagged model to examine the reciprocal relations of academic motivation and achievement in a population of high school students, they found that autonomous motivation, as defined by a relative autonomy score, was positively associated with academic achievement over the course of one year, even after controlling for baseline achievement. However, they did not estimate the contribution of each type of motivation to later achievement, making it difficult to understand which type of motivation was driving this relation.

Given the inconsistent results of past cross-sectional studies and the paucity of longitudinal studies that have controlled for baseline levels of achievement, a more systematic review of the research is needed in order to fully understand the effect of each different motivation type on school achievement. Moreover, as Ratelle et al. (2007) have suggested, more longitudinal studies are necessary to provide some information about the causal mechanisms between motivation and achievement. Finally, no studies have examined these longitudinal relations in samples of high school students. Since failure to achieve is a prevalent problem in high school and leads to undesirable consequences such as dropout, it is imperative to conduct carefully controlled studies in such a pre-university population.

1.3. Overview of studies

In an attempt to overcome the limitations of past research, we conducted a meta-analysis and a series of three empirical studies to systematically examine the contribution of the different motivation types to school achievement. The meta-analysis (Study 1) reviewed cross-sectional and longitudinal studies that have assessed the relation of motivation types to school achievement according to SDT, using the Academic Motivation Scale (AMS) designed by Vallerand et al. (1992). This is the most widely used scale of school motivation from the SDT framework. We also designed three controlled, longitudinal studies that used the AMS to measure five different types of academic motivation and to examine their relation to school achievement over time. To ensure that our findings were robust and generalizable, we varied the school context

¹ Integrated regulation, the most autonomous form of extrinsic motivation, occurs when the value of the instrumental behaviour has come to be in harmony with other various aspects of a person's values and identity to form a coherent sense of self. A student who does not like math but understands the importance and benefits of taking a statistics class and does so because he wants to eventually become a psychologist displays integrated regulation. It must be noted that integrated regulation requires much effort, self-awareness, and reflection (Vansteenkiste, Niemiec, & Soenens, 2010). Moreover, this type of motivation has not typically been included in measures of academic motivation because some early studies showed that students could not differentiate it from identified regulation on self-report scales (Robert J. Vallerand et al., 1992).

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