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Dropout intentions in PhD studies: A comprehensive model based on interpersonal relationships and motivational resources

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ABSTRACT

The purpose of this study was to provide a better understanding of doctoral studies persistence and completion by developing and validating a predictive model of dropout intentions. Based on self-determination theory (SDT), the model posits that perceived competence decreases dropout intentions, and that perceived competence is explained by autonomous and controlled regulations, which are in turn predicted by perceived psychological needs support provided by the student's advisor, faculties as well as other graduate students. A two-pronged approach was used: 1) a retrospective comparison of completers and noncompleters ($N = 422$), and 2) a prospective examination of enrolled PhD students over two trimesters to assess dropout intentions ($N = 1060$). Overall, the findings of the two studies are similar and support the proposed model. Specifically, perceived competence appears to be the cornerstone of doctoral studies persistence (completion and dropout intentions) and is predicted mainly by autonomous and controlled regulations and advisor support. Both perceived support by advisor and by faculty have an indirect effect on dropout intentions through motivational processes.

1. Introduction

In the United States and Canada, enrollment in doctoral programs rose by 64% and 57%, respectively, from 1998 to 2010 (OECD, 2013). A doctoral education confers many benefits, for both individuals (e.g., greater professional and personal mobility, better working conditions, higher income) and society (e.g., tax incomes, knowledge production and dissemination, innovation, social and economic development; AUCC, 2009; Auriol, 2010; Wendler et al., 2012). Nevertheless, doctoral attrition rates remain high in North America, at an estimated 40% to 50% (Berelson, 1960; CGS, 2009; MERS, 2013; Nettles & Millett, 2006). However, they vary across disciplines, being higher in the arts, humanities, and social sciences and lower in the natural sciences (Bowen & Rudenstine, 1992; CGS, 2009; Elgar, 2003; Nettles & Millett, 2006).

Although some students may have compelling personal reasons for leaving their PhD program, such as attractive job opportunities, financial difficulties, and family obligations, the consequences for these students, as well as for universities and society, can be costly. Students who drop out may have fewer employment opportunities and experience lower self-esteem (Lovitts, 2001; Statistics Canada and Human Resources Development Canada, 2003). Moreover, the substantial time and energy they invested could have been directed to other areas of their lives. For the university, doctoral attrition reduces resources and at the same time incurs costs for faculty members who have invested considerable time in research projects that will never be completed. For society, doctoral program noncompletion results in lower productivity and competitiveness (Wendler et al., 2010, 2012).

Despite the high and steady attrition rates and the negative consequences of dropping out, the media and policymakers show little interest in this issue. This disinterest is also reflected in a lack of research. In 1993, Tinto noted that very few empirical studies had addressed this topic, and those that had were usually not guided by a comprehensive model or theory. Twenty years later, the situation has not changed significantly (see Ampaw & Jaeger, 2012; Elgar, 2003; Golde, 2005; Tamburri, 2013).

Given the relevance of doctoral student persistence, the lack of research on this subject, and the dearth of adequate theoretical models, this study aimed to develop and test a model of doctoral dropout

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intentions based on self-determination theory (SDT; Deci & Ryan, 1985). The model posits that motivational resources and perceived psychological needs support provided by advisors, faculty, and other graduate students are strong predictors of doctoral dropout intentions. Below, we introduce SDT. We then present a brief literature review concerning the relationship of doctoral persistence to autonomous regulation, competence, and support by students, faculty, and the advisor. We also present the persistence determinants we used as control variables. We then describe our model in more detail and outline the two studies we conducted to validate it.

1.1. Theoretical background: Self-Determination Theory (SDT)

According to SDT, individuals possess a natural tendency for psychological growth and integration (Deci & Ryan, 2012b). This tendency is a function of the social context in which individuals evolve, and the capacity of that context to support and satisfy three innate psychological needs: *autonomy*, *competence*, and *relatedness* (Deci & Ryan, 1985, 2012a, 2012b). Autonomy refers to "the necessity of experiencing a sense of choice, willingness, and volition as one behaves" (Deci, Ryan, & Guay, 2013, p. 113). Competence relates to the feeling of being effective in one's interactions with the environment and being able to exercise their capacities. Relatedness refers to the quality of interpersonal relationships, to the "need to be close to, trusting of, caring for, and cared for by others" (Deci & Ryan, 2012a, p. 421). The more the social environment satisfies psychological needs, the more positive the consequences (Deci & Ryan, 2012a). In this study, we assess psychological needs support provided by advisors, faculty, and other graduate students as potential determinants of autonomous and controlled regulations (Deci & Ryan, 2012a; Vansteenkiste, Lens, & Deci, 2006).

Autonomous regulation takes place when individuals perceive that their behaviors and goals result from their own volition and choice. In contrast, controlled regulation refers to acting in order to obtain a reward or recognition by others, or to avoid punishment, feelings of guilt, or shame. Empirical evidence supports the argument that when psychological needs are satisfied, people experience greater autonomous motivation and lower controlled motivation (see Deci & Ryan, 2000, for a review). Moreover, autonomous regulation is associated with positive outcomes, whereas controlled motivation is associated with negative outcomes (Guay, Ratelle, & Chanal, 2008). In a study conducted to validate a scale of motivation toward completing a PhD (Litalien, Guay, & Morin, 2015), autonomous regulation was positively associated with satisfaction (university, program, and studies), positive affect, performance, and postdoctoral intentions, and negatively associated with test anxiety, negative affect, dropout intentions, and thesis problems. Conversely, controlled regulation was positively associated with the aforementioned negative outcomes but negatively with most of the positive outcomes.

Similarly, Losier (1994) demonstrated that academic persistence in graduate students was predicted mainly by autonomous regulation. Black and Deci (2000) found that undergraduate students who took a chemistry class for less autonomous reasons were more likely to drop out of the course. Autonomous regulation has also been associated with persistence in junior-college students (Vallerand & Bissonnette, 1992) and high school students (Vallerand, Fortier, & Guay, 1997), whereas controlled regulation was negatively associated with persistence.

In addition to autonomous regulation, perceived competence is a central concept in SDT and in other theories (e.g., Ajzen, 1985; Bandura, 1993) that is associated with positive consequences. More precisely, competence beliefs have been associated with persistence in numerous studies using different samples, methodologies, and measures (Multon, Brown, & Lent, 1991). For example, Quiroga, Janosz, Bisset, and Morin (2013) found that perceptions of academic competence predicted school dropout in a sample of seventh-graders. College competence beliefs at the end of the first semester were also associated with persistence in the next semester, controlling for college competence beliefs on the first college day and other variables such as gender, ethnicity, first-generation status, and high school academic achievement (Wright, Jenkins-Guarnieri, & Murdock, 2012). In graduate students, perceived academic competence predicted later academic persistence (Losier, 1994), while in doctoral students, competence beliefs toward research have been associated with interest in the research (Bishop & Bieschke, 1998) and research productivity (e.g., number of submitted articles, conference presentations; Brown, Lent, Ryan, & McPartland, 1996; Hollingsworth & Fassinger, 2002).

1.1.1. Proposed sequence between theoretical constructs

When assessing both regulation types and perceived competence in a model, previous research based on SDT supported different sequences (e.g., autonomous regulation predicting perceived competence vs. perceived competence predicting autonomous regulation). The model proposed here favors the sequence in which autonomous and controlled regulations precede perceived competence. Two reasons lead us to propose such a sequence:

First, according to SDT, higher level of autonomous regulation could precede perceived competence because the educational tasks to master at the graduate level are complex and necessitate a high level of cognitive and behavioral engagement. Autonomous motivation toward PhD studies could help students to initiate and engage in a set of complex actions (e.g., trying to understand a given phenomenon by reading numerous scientific articles, synthetizing a literature, generating ideas that will contribute to existing knowledge, learning research methods, and developing an expertise in analyzing qualitative or quantitative data). This willingness and involvement are thus likely to lead them to improve their skills and to perceive themselves as more competent in achieving these tasks. In other words, autonomous motivation facilitates the execution of those complex actions, which in turn mobilize perceptions of competence.

Second, empirical evidence concurs with this sequence. In second year medical students, Williams and Deci (1996) found that autonomous motivation mediated the relationship between perceived autonomy support by instructors and subsequent perceived competence. Black and Deci (2000) also showed that undergraduate students with higher autonomous motivation at the beginning of term were more likely to perceive themselves as competent at the end of term. Although related to the health domain, other studies based on SDT also supported this sequence. Williams, Freedman, and Deci (1998) showed that perceived autonomy support by the health care provider increased patients' autonomous regulation, which led them to feel more competent. In turn, perceived competence predicted persistence of healthy behaviors in time. Moreover, Williams, McGregor, Zeldman, Freedman, and Deci (2004) found that perceived competence for engaging in healthy behaviors mediated the relationship between autonomous regulation and health behavior change.

We suggest that students who perceive their environment as more supportive will be more autonomously motivated toward their PhD studies. In turn, they will perceive themselves as more competent and will be less likely to quit their program. In contrast, students who perceive less support will be more likely to be regulated by controlled motivation and less likely to experience autonomous regulation. In turn, they will perceive themselves as less competent and will be more likely to quit the program.

1.2. Doctoral studies persistence and support for psychological needs

SDT suggests that autonomous regulation flourishes when interactions with others support the satisfaction of the three