UiT The Arctic University of Norway

Department of Psychology – Faculty of Health Sciences

Drop-out and transfer-out intentions: The role of socio-cognitive factors

—

Efim Nemtcan

Research article Student Research Program in Psychology, PSY-8015 - *May 2020*

Drop-out and transfer-out intentions:

The role of socio-cognitive factors

Efim Nemtcan, Rannveig Grøm Sæle, Thor Gamst-Klaussen, & Frode Svartdal

UiT The Arctic University of Norway

Contact: E. Nemtcan, Department of psychology, UiT The Arctic University of Norway, 9037 Tromsø, Norway. E-mail: ene014@uit.no

Abstract

The current study addresses academic attrition from the perspective of behavioral intentions. Specifically, we focus on the roles of academic skills and academic self-efficacy related to attrition intentions. Based on existing research, we expected a negative relation between academic skills and attrition intentions, with academic self-efficacy as a possible mediator. Furthermore, it was explored if this effect would be dependent on the outcome variable being measured (i.e., drop-out, transfer university, and transfer study field intentions). These hypotheses were investigated among Norwegian university students who agreed to participate in the questionnaire study (total N = 756). A full structural equation model (SEM) was employed. Results showed, as predicted, that academic self-efficacy mediated the effect of students' academic skills on attrition intentions. Importantly, significant variability was indicated in comparison of the different outcome measures, with academic self-efficacy having a larger mediation effect in case of drop-out and transfer study field intentions. We conclude that academic self-efficacy is important in understanding the relationship between students' academic skills and attrition intentions. Assistance programs aiming to reduce academic attrition are advised to teach students not only effective academic skills but also address their self-efficacy beliefs.

Keywords: Academic attrition, attrition intentions, drop-out intentions, transfer university intentions, transfer study field intentions, study strategies, academic skills, academic self-efficacy.

Socio-cognitive factors and attrition intentions:

The role of socio-cognitive factors

Obtaining a higher education has become more common in the transition from school to work leading to better economic success and well-being (Dalgard et al., 2007; OECD, 2019). However, according to the estimates by the EU research team on academic attrition rates across Europe, 19 to 40% of students withdraw from higher education (Vossensteyn et al., 2015). Although significant improvements have been achieved in the Norwegian higher education during the past years, the state of affairs on academic attrition is similar to other western societies (Ministry of Education and Research, 2018). According to recent estimates, 19% of bachelor students do not complete their academic degrees (Statistics Norway, 2019a). Students leaving before graduation represent an inefficient use of government funding (Statistics Norway, 2019b), and represent a considerable loss for students themselves in terms of health and career prospects (Muennig, 2007; Steingrímsdóttir et al., 2012).

What are the reasons for leaving higher education? Departure before degree completion has been extensively examined from a sociological perspective (for review, see Aljohani, 2016). A central aspect of this perspective is that departure is assumed to be a function of interaction with the academic environment, such as social and academic integration (Cabrera et al., 1993; Tinto, 1975, 1993). In contrast, psychological theories of students' attrition address the problem by emphasizing the role of cognitive factors (Bean & Eaton, 2001). For example, attitude-behavior theories posit that individuals' attitudes, subjective norms, and perceived behavioral control determine goal intentions which lead to actual behaviors (Ajzen, 1991; Bean, 1982; Fishbein & Ajzen, 1975).

Common to both these perspectives is that they focus on actual behavior. Despite extensive evidence on the role of intentions in predicting behavior, few studies have focused on attrition intentions as the primary outcome of interest (Sheeran, 2002). As behavioral

intentions are an excellent predictor of actual attrition behavior (e.g., Bean, 1982; Mashburn, 2000), focus on attrition intentions may add valuable insights to attrition problem, allowing for preventive measures before actual attrition. For example, the knowledge on predictors for attrition intentions may aid in the development and utility assessment of prospective intervention programs such as academic skills training courses or more rigorous study plans.

Further, the distinction between different attrition intentions has been rarely addressed in previous studies. Research has concentrated primarily on either intention to withdraw entirely or intention to change university (e.g., Farr-Wharton et al., 2018; Raciti, 2012). Consequently, findings assessing the relationship between sets of variables and intentions to withdraw entirely from higher education may not be equally applicable in case of intentions to change academic institution (e.g., Bean, 1982).

Thus, in the present study, we aim to investigate and facilitate the understanding of mechanisms that promote attrition intentions among students. As will be discussed in the section to come, these issues will be examined from the perspective of academic skills, academic self-efficacy, and students' integration. Although these factors have been shown to be related to attrition behavior, they have not been examined accounting for different categories of attrition intentions (e.g., leaving entirely, changing academic institution, and changing study field).

Socio-cognitive factors

Academic and social integration

Research on academic attrition has its roots within the field of sociology (Aljohani, 2016). The most prominent theory, the Institutional Departure Model, was devised by Tinto (1975). This model assumes a crucial role of students' integration for attrition-retention behavior. Tinto theorized that integration is a function of the interaction between student

characteristics (e.g., skills, abilities) and academic environment. Academic integration (e.g., grade performance, intellectual development) and social integration (e.g., interaction with peers and faculty, sense of belonging to peers, and extracurricular activities), in turn, affect students' commitment, satisfaction, and attrition. The crucial role of students' interaction with the academic environment in explaining attrition behavior is also highlighted in the Student Attrition Model by Bean (1982), and the Student Retention Integrated Model by Cabrera et al. (1993).

Behavioral intentions

The discussed models are similar in their approach and emphasis on socialization processes in explaining academic attrition. However, Bean (1982) and Cabrera et al. (1993) argued that students' intentions are significant antecedents of actual behavior. *Intentions* are mental states of self-instruction to perform a behavior or to obtain a certain outcome (Webb & Sheeran, 2006). Intentions have been used to predict a wide range of behaviors from physical activity to academic achievement, explaining almost 30% of the variance, and have a large impact (d = 1.47) on these behaviors (e.g., Sheeran, 2002). Results of the meta-analysis by Webb and Sheeran (2006), indicated that a medium-to-large experimentally induced change in intentions leads to a small-to-medium change in health-related behaviors. According to Bean (1982), intentions to leave university have the most substantial direct effect and explain the largest proportion of variation in actual behavior. The findings are in line with different theoretical frameworks designed to explain and predict human behavior (for an overview, see Webb & Sheeran, 2006).

Academic skills

Even if intentions can predict students' attrition behavior, they do not contain information besides whether a person aims to perform a particular behavior. Finding the factors that, in turn, determine behavioral intentions is of a great theoretical and practical

value, e.g., understanding working mechanisms, assistance, and assessment. Here, academic skills provide a crucial stepping stone to the solution. Academic skills have been consistently shown to promote students' performance, attrition intentions, and actual attrition behavior (Bean & Metzner, 1985; Bernardo et al., 2019; Credé & Kuncel, 2008; Robbins et al., 2004; Rovai, 2003).

Academic skills can be defined as a student's ability to manage time, use different study strategies, and manage their resources to reach their goals and complete academic tasks (Tressel et al., 2019, p.122). However, students receive little instruction on how they should acquire and properly use these skills, and these instructions are usually not included in study curricula (Dunlosky et al., 2013). Also, even if students possess knowledge about "healthy" academic skills, they may not practice them and approach academic tasks in unproductive ways. Some indirect evidence (Foerst et al., 2017) and research findings (Svartdal et al., 2020) show that academic skills are related to self-efficacy being a potential determinant of their implementation and practice. For example, Foerst et al. (2017) indicated that doubt about the ability to implement self-regulated learning (SRL) strategies and lack of time were among the most popular self-reported reasons for not using them.

In the present paper, we focus on a specific and important category of academic skills, time-management skills. For example, in the study by Sauvé et al. (2018), half of the participants reported problems with time management. Time-management skills can be generally defined as students' knowledge and ability to effectively manage study time to achieve an academic outcome. Also, time-management skills are generally attributed to predict students' learning, academic performance, and attrition (Credé & Kuncel, 2008; Dunlosky et al., 2013; George et al., 2018, Goldfinch & Hughes, 2007; Kitsantas et al., 2008; Xuereb, 2014).

Time-management is a part of the broader concept, such as self-regulated learning (SRL), found significant for academic success, learning, and achievement (Zimmerman, 1998, 2002). SRL is defined as students' active engagement in self-generated thoughts, feelings, and actions that are oriented toward the attainment of academic goals. In turn, SRL process can be divided into four interdependent phases: planning, monitoring, control, reflection (Pintrich, 2000, p.454). Students' ability to manage their time is a crucial component of this process. For example, a student can decide to study one chapter from a book each day for one hour (i.e., planning). Subsequently, the student realizes that he/she does not manage to follow the initial plan due to long breaks (i.e., monitoring). As a result, the student decides to take only 15 minutes' break a day to finish the chapter (i.e., control). When the student passed an exam, he/she re-evaluates the past approach in planning how to approach a different subject, e.g., increasing study time to three hours due to poor exam results (i.e., reflection). Thus, planning (i.e., time management) can be seen as an initial step of the learning process.

Further, time-management is a significant predictor of another detrimental tendency observed among university students, procrastination (Wolters et al., 2017). Procrastination is the voluntary delay of an intended course of action despite expecting to be worse off for doing so (Steel, 2007). In turn, procrastination is related to students' poor performance and drop-out intentions (Bäulke et al., 2018; Steel, 2007).

In sum, students' time management skills are important for academic success and retention. Further, it is closely associated with another problem challenging 50% of students, the procrastination problem (Steel, 2007). Since planning academic activity is an initial step of a study prosses, it is evident that good time-management skills are crucial for the effective study process. Even if students possess good academic skills and apply them correctly (e.g., relating ideas in preparing for essay form of an exam), they might ineffectively devote their

time to different competing goals. This might lead to poor performance and negative experience reducing the sense of student's self-efficacy which is crucial for subsequent effort, persistence, and self-regulation of behavior (Bandura, 1997; Heikkilä & Lonka, 2006; Steel, 2007). Therefore, we argue that time-management skills is a central aspect of students' learning and is crucial for understanding academic attrition.

Academic self-efficacy

Like time-management skills, academic self-efficacy is an important part of academic attrition puzzle. Here, the Theory of Planned Behavior (TPB) can provide a theoretical explanatory framework for academic attrition (Ajzen, 1991). According to Ajzen (1991, 2002), self-efficacy is a crucial dimension of behavioral control which is a central aspect in the formation of behavioral intentions and actual behavior.

The concept of *self-efficacy* refers to the conviction or belief that one can successfully perform a behavior required to achieve the desired outcome. According to Bean and Eaton's (2001) psychological model of academic attrition, self-efficacy is an important precondition of students' intentions to persist and actual persistence. The assumption is in line with several findings indicating a negative relationship between academic self-efficacy and attrition intentions (Willcoxson, 2010; Willcoxson et al., 2011). Based on the findings by Wernersbach et al. (2014), academic skills training courses can lead to changes in students' academic self-efficacy.

Variability of attrition

Multiple researchers agree that treating non-returning students as a single cohort is inappropriate (Grosset, 1993; Hoyt & Winn, 2004; Porter, 2000). Indeed, based on the dichotomy of system and institutional attrition (i.e., dropping-out and transferring out), different sets of factors are found significant in explaining these behaviors (Hovdhaugen, 2009). For example, Hovdhaugen (2009) indicated that background characteristics such as

gender, age, and school grades were particularly more predictive of students' drop-out than transfer out behaviors. In contrast, students' motivation, educational goals, and field of the study predicted a subsequent transfer to another university.

Dropping out can be defined as leaving an academic institution before degree completion and having no concrete intentions of returning to higher education. *Transferring out* is commonly referenced when an act of moving from a university (where students commenced their studies) to another higher education institution has taken place (Hovdhaugen, 2009). Students changing their initial study programs are also included in the category of transfer outs. However, relatively few studies have compared the relationships between investigated predictors and types of attrition behavior. Further, whether such differences are present when students' intentions to either change university or withdraw permanently is absent. Thus, we aim to address this issue through an assessment of students drop-out, transfer university, and transfer (i.e., change) study field intentions.

The current study

In the present paper, we first attempt to assess the importance of academic skills (i.e., time-management skills) for attrition intentions, given self-efficacy, academic and social integration as possible mediating factors. As discussed, time-management is a crucial component in students' learning and performance. Further, there are two possible mechanisms through which time-management skills could influence drop-out and transfer out intentions. First (*Hypothesis 1*), the relationship between time-management skills and attrition intentions might be mediated by their self-efficacy beliefs (Foerst et al., 2017; Robbins et al., 2004). Second (*Hypothesis 2*), the effect could be dependent on the level of students' integration (Bean, 1982; Bean & Eaton, 2001; Elliott, 2010; Tinto, 1993). However, as discussed, the relationship between the variables of interest could be dependent on the

measured outcome (e.g., drop-out, transfer out intention). Thus (*Hypothesis 3*), we aim to conduct an exploratory analysis if the mediated effects of time-management skills would differ depending on the outcome measure - drop-out, transfer university, or transfer study field intentions (Hovdhaugen, 2009; Tinto, 1993).

Method

Sample and setting

Participants were 756 students (72 % females) in different stages of their studies at the university: first year (25%), second-year (24%), third-year (17%), fourth-year (13%), fifth-year (11%) and sixth-year or more (10%). Age ranged from 18-54 with a mean of 24.3 years (*SD*=4.83).

Assessment and measures

Students participating in this study were recruited through Facebook and via e-mail sent to the active students registered at Norwegian universities. Participant from UiT The Arctic University of Norway and UiO University of Oslo were recruited via e-mail sent to active students. Data collection was done with the online survey tool Qualtrics (www.qualtrics.com), which participants could access using either a mobile device or a computer.

Ethics

Participants were presented with a consent form, informed that they were anonymous and could refrain from answering or withdraw from the study at any time. The study was approved by the Norwegian Center for Research Data (NSD) in accordance with the requirements of data protection legislation (reference code 651244).

Background factors

Students were asked to report their age, gender, study field, university affiliation, parents' education, and if they have previously changed a study field or university.

Time-management skills

The time-management skills subscale from Approaches and Study Skills Inventory for Students (ASSIST) inventory was chosen based on its internationally validated stable factor structure and disciplinary nature of the present study (e.g., Bonsaksen, 2018). An example item is: "I organize my study time carefully to make best use of it". Response options ranged from 1 = Totally agree to 5 = Totally disagree. In the study by Diseth (2001), internal reliability of the subscale was .72. In the current sample Cronbach's alpha was .78.

Academic self-efficacy

The measurement index was borrowed from a Danish study by Herrmann et al. (2017). Scale is based on MSLQ (Motivated Strategies for Learning Questionnaire) by Pintrich et al. (1991). Self-efficacy, as it is used here, refers to the students' self-appraisal of their ability to master a task and includes judgment about their ability to accomplish a task as well as their confidence in their ability to perform that task (Pintrich et al. 1991). Three items were chosen based on the reported highest loadings (Herrmann et al., 2017). An example item is: "I am confident that I can acquire the skills necessary to excel within my field of study". Original Cronbach's alpha (five items) was .83. Internal reliability for the current sample was .78.

Academic and social integration

The academic and intellectual development subscale from the Institutional Integration Scale was chosen as a measure of academic integration (Pascarella & Terenzini, 1980). Response alternatives were: 1 = Not true of me to 5 = Totally true of me. An example item is: "I am satisfied with the extent of my intellectual development since enrolling in this

university". Original Cronbach's alpha (seven items) was .74. Internal reliability of three items for the current sample was .84. Three items from the Peer-group interaction subscale were borrowed from the same measurement index (Pascarella & Terenzini, 1980). An example item is: "Since coming to this university I have developed close personal relationships with other students". Original Cronbach's alpha (seven items) was .84. Internal reliability of the three items was .84.

Drop-out intentions

Two items were taken from the study by Hardre and Reeve (2003): "I sometimes consider dropping out of university before graduation", "I intend to drop out of school before graduation". Original Cronbach's alpha (Three Items) was .79. The third item was not included in the present study due to complexity and unclear logic for inclusion in the original study ("I sometimes feel unsure about continuing my studies year after year"). Based on the Mindset Theory of Action Phases (Gollwitzer, 2019), two additional items were designed for these study which intend to measure the degree of intention's formation ("I sometimes think that other job opportunities suit me better than those I can get with my current education"; "I know what I am going to do if I withdraw from my studies"). The second item was subsequently excluded based on the low factor loading of .397. Cronbach's alpha was .67, which is lower than advised 0.70. However, internal consistency is considered sufficient given the number of items (Cortina, 1993; Streiner, 2015).

Transfer-out intentions

Two items were taken from the same study by Hardre and Reeve (2003) but rephrased with a focus on transfer-out intentions (e.g., consider changing university, intend to change university). Similar to the drop-out intentions' measure, two items were devised based on the Mindset Theory of Action Phases (see Appendix). Internal reliability for intentions to change university and study field were .76 and .82 respectively.

Time-to-degree

The time students would spend on degree completion was a self-reported measure borrowed from Gillingham et al. (1991). Two questions were asked: “How long time have you spent studying at this program”, “How long do you expect it would take to finish your education”. Time-to-degree is a sum score of the time already spent in the program and self-reported expected remaining time. The measure was excluded from analyses since it was wrongly recorded (i.e., unclear formulation of the second item).

Model specification and estimation

A structural equation model (SEM) analysis was employed since it allows estimation of cross-equation error correlation (see Bollen, 1989). Allowing such correlations is important, because academic and social integration are generally assumed to be related constructs (Tinto, 1993). Further, the weighted least squares parameter (WLSMV) estimation was implemented, which is appropriate when manifest variables are categorical or ordinal, and the sample size is relatively large (Muthen & Muthen, 1998-2017). Also, WLSMV was preferred over maximum likelihood (ML) due to heteroscedasticity of the outcome variables, e.g., attrition intentions (Kline, 2015). Bootstrapping (based on 10000 draws) was also implemented.

Model fit data were examined using the chi-square test, Comparative Fit Index (CFI), Tucker-Lewis Fit Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR). Standard fit cut-off values were applied: CFI, TLI values greater than .95, SRMR less than .08, and RMSEA less than .06 (Hu & Bentler, 1999). Values equal to or lesser/higher than cut-off values indicate good and close fit. Confirmatory factor analysis (CFA) was performed to assess the validity of measurement model (e.g., time-management skills, academic self-efficacy, academic and social integration). The results of CFA indicated perfect fit (see Supplementary materials). Analyses

were performed with Mplus version 8. The current study was preregistered on Open Science Framework (OSF) where the supplementary materials and preregistration protocol could be retrieved.

Results

Time-management skills and attrition intentions via academic self-efficacy

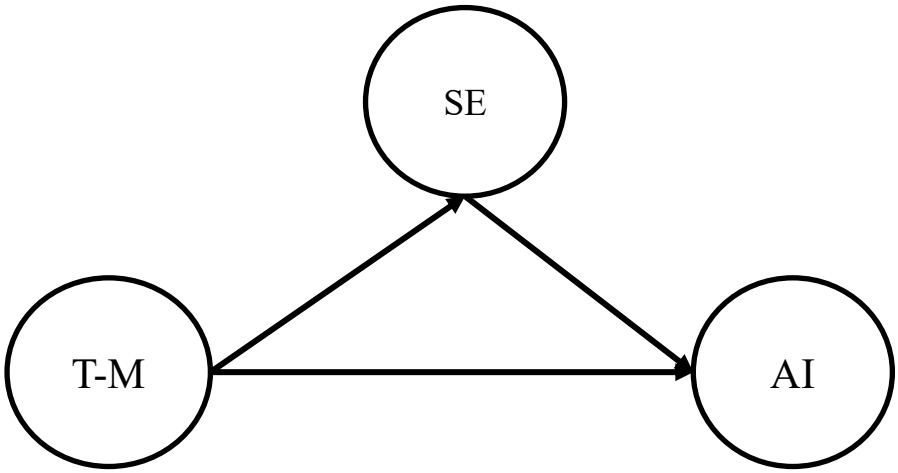

Figure 1. Conceptual model. T-M = Time-management skills; SE = Academic self-efficacy; AI = Attrition Intentions (Drop-out, Transfer University, Transfer Study Field).

The analyses were performed accounting for the effects of other variables that were previously found to influence students' attrition behaviors (e.g., gender, age, parents' education). Only participants' age, time spent at university in years, initial goal of obtaining an academic degree, previous history of changing university or study field, parent's education, grade-average from upper-secondary school, and university affiliation were significant and were included in the final model. Only results for the main effects are reported (see Supplementary materials for more details).

Drop-out intentions

The overall model fit for *drop-out intentions* was very good. The chi-square test was significant (chi-square = 126.032, df = 50, $p < .001$), CFI = 0.987; TLI=0.983; RMSEA = 0.045 (90% CI 0.035 - 0.055); SRMR = 0.038. The direct effect from time-management skills

to drop-out intentions was insignificant (β = -0.074, boot SE = 0.055, p = 0.177). The indirect effect of time-management skills on drop-out intentions through self-efficacy was significant (β = -0.199, boot SE = 0.032, p < 0.001).

Transfer university intentions

The overall model fit for *transfer university intentions* was good. The chi-square test was significant (chi-square = 228.576, df = 121, p < .001), CFI = 0.983; TLI=0.980; RMSEA = 0.035 (90% CI 0.028 - 0.042); SRMR = 0.080. The direct effect from time-management skills to transfer university intentions was insignificant (β = 0.083, boot SE = 0.056, p = 0.135). The indirect effect of time-management skills on drop-out intentions through self-efficacy was significant (β = -0.098, boot SE = 0.030, p = 0.001).

Transfer study field intentions

The overall model fit for *transfer study field intentions* was very good. The chi-square test was significant (chi-square = 192.841, df = 91, p < .001), CFI = 0.987; TLI=0.985; RMSEA = 0.039 (90% CI 0.031 - 0.046); SRMR = 0.051. The direct effect from time-management skills to transfer study field intentions was insignificant (β = -0.022, boot SE = 0.052, p = 0.674). The indirect effect of time-management skills on drop-out intentions through self-efficacy was significant (β = -0.122, boot SE = 0.028, p < 0.001).

The results indicate “indirect-only” mediation of time-management skills on drop-out and transfer study field intentions by academic self-efficacy (Zhao et al., 2010). This implies that academic self-efficacy fully mediated the relationship between time-management skills and attrition intentions (see Table 1).

Table 1. Model estimates.

	Coefficient (β)	Boot SE	95 % CI (BCB)	*p*
Drop-out Intentions (n = 756)				
TIME → EFFICACY	0.458	0.041	[0.372, 0.536]	<0.001
TIME → DR	-0.074	0.055	[-0.180, 0.033]	0.177
EFFICACY → DR	-0.434	0.053	[-0.537, -0.328]	<0.001
Indirect effects				
TIME via EFFICACY	-0.199	0.032	[-0.265, -0.141]	<0.001
Total effect	-0.272	0.047	[-0.366, -0.179]	<0.001
Transfer University Intentions (n = 735)				
TIME → EFFICACY	0.451	0.044	[0.361, 0.533]	<0.001
TIME → TR_U	0.083	0.056	[-0.030, 0.190]	0.135
EFFICACY → TR_U	-0.216	0.059	[-0.335, -0.102]	<0.001
Indirect effects				
TIME via EFFICACY	-0.098	0.030	[-0.163, -0.045]	0.001
Total effect	-0.014	0.049	[-0.111, 0.082]	0.768
Transfer Study Field Intentions (n = 754)				
TIME → EFFICACY	0.459	0.042	[0.374, 0.540]	<0.001
TIME → TR_ST	-0.022	0.052	[-0.121, 0.085]	0.674
EFFICACY → TR_ST	-0.265	0.054	[-0.371, -0.159]	<0.001
Indirect effects				
TIME via EFFICACY	-0.122	0.028	[-0.186, -0.072]	<0.001
Total effect	-0.144	0.046	[-0.272, -0.060]	0.002

Note: BCB = bias-corrected bootstrap; DR = Drop-out intentions; TR_U = Transfer university Intentions; TR_ST = Transfer study field intentions; TIME = Time-management Skills; EFFICACY = Academic Self-efficacy.

In sum, it was hypothesized (*Hypothesis 1*) that effect of time management on attrition intentions would be mediated by academic self-efficacy. The hypothesis was supported despite generally small effect of time management skills. The indirect-only mediation was found in all three cases (see Table 1). The indirect only mediation overlaps with Baron and Kenny's (1986) conceptualization of full mediation effect excluding precondition of significant direct relationship between independent and dependent variables. Further, comparison of mediation effect sizes (completely standardized mediation effects) showed that the effect of academic self-efficacy was larger in case of drop-out ($\beta = -0.199$, $p < 0.001$) and transfer study field intentions ($\beta = -0.122$, $p < 0.001$) than transfer university intentions ($\beta = -0.098$, $p < 0.001$). Thus, *Hypothesis 3* was supported.

Time-management skills and attrition intentions via academic and social integration

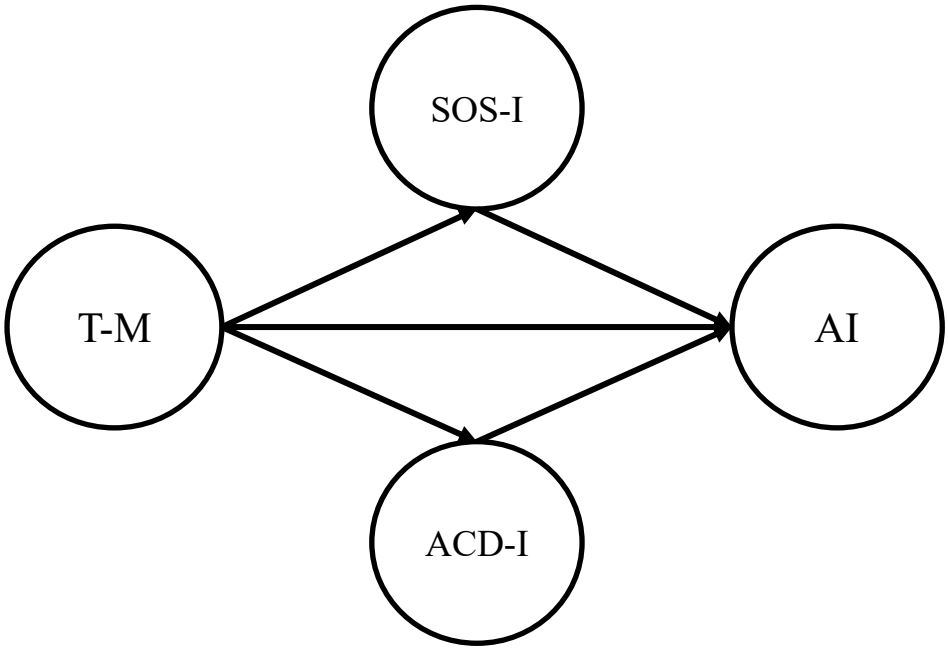

Figure 2. Conceptual model. T-M = Time-management skills; SOS-I = Social integration; ACD-I = Academic integration; AI = Attrition Intentions (Drop-out, Transfer University, Transfer Study Field).

Drop-out intentions

The overall model fit for *drop-out intentions* was very good. The chi-square test was significant (chi-square = 301.647, df = 83, p < .001), CFI = 0.985; TLI=0.981; RMSEA = 0.059 (90% CI 0.052 - 0.066); SRMR = 0.052. The direct effect from time-management skills to drop-out intentions was significant (β = -0.126, boot SE = 0.049, p = 0.01). The indirect effect of time-management skills on drop-out intentions through academic integration was significant (β = -0.092, boot SE = 0.022, p < 0.001). Similarly, social integration was a significant mediator (β = -0.053, boot SE = 0.016, p = 0.001). Thus, the results indicate "complimentary" mediation of time-management skills on drop-out field intentions by academic and social integration (Zhao et al., 2010). This implies that academic and social integration partially mediated the relationship between time-management skills and drop-out intentions (see Table 2).

Table 2. Model estimates.

	Coefficient (β)	Boot SE	95 % CI (BCB)	*p*
Drop-out Intentions (n = 756)				
TIME → ACD-I	0.321	0.044	[0.234, 0.409]	<0.001
TIME → SOS-I	0.218	0.045	[0.130, 0.306]	<0.001
TIME → DR	-0.126	0.049	[-0.224, -0.031]	0.01
ACD-I → DR	-0.287	0.057	[-0.344, -0.173]	<0.001
SOS-I → DR	-0.244	0.050	[-0.537, -0.146]	<0.001
Indirect effects				
TIME via ACD-I	-0.092	0.022	[-0.142, -0.054]	<0.001
TIME via SOS-I	-0.053	0.016	[-0.091, -0.027]	0.001
Total effect	-0.272	0.047	[-0.366, -0.178]	<0.001

Note: BCB = bias-corrected bootstrap; DR = Drop-out intentions; SOS-I = Social integration; ACD-I = Academic integration; TIME = Time-management Skills.

Transfer university intentions

The overall model fit for *transfer university intentions* was very good. The chi-square test was significant (chi-square = 378.714, df = 175, p < .001), CFI = 0.986; TLI=0.984; RMSEA = 0.040 (90% CI 0.034 - 0.045); SRMR = 0.078. The direct effect from time-management skills to transfer university intentions was insignificant (β = 0.094, boot SE = 0.050, *p* = 0.06). The indirect effect of time-management skills on transfer university intentions through academic integration was significant (β = -0.042, boot SE = 0.019, *p* = 0.03). Similarly, social integration was a significant mediator (β = -0.068, boot SE = 0.019, *p* < 0.001). Thus, the results indicate "indirect-only" mediation of time-management skills on drop-out field intentions by academic and social integration (Zhao et al., 2010). This implies that academic and social integration fully mediated the relationship between time-management skills and transfer university intentions (see Table 3).

Table 3. Model estimates.

	Coefficient (β)	Boot SE	95 % CI (BCB)	*p*
Transfer University Intentions (n = 735)				
TIME → ACD-I	0.332	0.045	[0.239, 0.419]	<0.001
TIME → SOS-I	0.222	0.046	[0.130, 0.307]	<0.001
TIME → TR_U	0.094	0.050	[-0.004, 0.191]	0.06
ACD-I → TR_U	-0.126	0.054	[-0.231, -0.022]	0.02
SOS-I → TR_U	-0.306	0.054	[-0.412, -0.202]	<0.001
Indirect effects				
TIME via ACD-I	-0.042	0.019	[-0.083, -0.008]	0.03
TIME via SOS-I	-0.068	0.019	[-0.112, -0.037]	<0.001
Total effect	-0.015	0.049	[-0.112, 0.081]	0.76

Note: BCB = bias-corrected bootstrap; TR_U = Transfer university Intentions; SOS-I = Social integration; ACD-I = Academic integration; TIME = Time-management Skills.

Transfer study field intentions

The overall model fit for *transfer study field intentions* was very good. The chi-square test was significant (chi-square = 332.436, df = 136, p < .001), CFI = 0.988; TLI=0.986; RMSEA = 0.044 (90% CI 0.038 - 0.050); SRMR = 0.063. The direct effect from time-management skills to transfer study field intentions was insignificant (β = -0.030, boot SE = 0.048, *p* = 0.53). The indirect effect of time-management skills on transfer study feild intentions through academic integration was significant (β = -0.055, boot SE = 0.021, *p* = 0.01). Similarly, social integration was a significant mediator (β = -0.059, boot SE = 0.017, *p* = 0.001). Thus, the results indicate "indirect-only" mediation of time-management skills on drop-out field intentions by academic and social integration (Zhao et al., 2010). This implies that academic and social integration partially mediated the relationship between time-management skills and transfer study field intentions (see Table 4).

Table 4. Model estimates.

	Coefficient (β)	Boot SE	95 % CI (BCB)	*p*
Transfer Study Field Intentions (n = 754)				
TIME → ACD-I	0.321	0.046	[0.228, 0.409]	<0.001
TIME → SOS-I	0.224	0.046	[0.132, 0.312]	<0.001
TIME → TR_ST	-0.030	0.048	[-0.121, 0.066]	0.53
ACD-I → TR_ST	-0.171	0.058	[-0.283, -0.057]	0.003
SOS-I → TR_ST	-0.262	0.054	[-0.366, -0.155]	<0.001
Indirect effects				
TIME via ACD-I	-0.055	0.021	[-0.101, -0.018]	0.009
TIME via SOS-I	-0.059	0.017	[-0.100, -0.030]	0.001
Total effect	-0.144	0.046	[-0.233, -0.052]	0.002

Note: BCB = bias-corrected bootstrap; TR_ST = Transfer study field intentions; SOS-I = Social integration; ACD-I = Academic integration; TIME = Time-management Skills.

In sum, it was hypothesized (*Hypothesis 2*) that effect of time management on attrition intentions would be mediated by academic and social integration. The hypothesis was supported despite generally small effects of time management skills. The indirect-only mediation was found in case of transfer intentions (see Table 3 and 4). The indirect only mediation overlaps with Baron and Kenny's (1986) conceptualization of full mediation effect excluding precondition of significant direct relationship between independent and dependent variables. Further, the complementary mediation was found in case of transfer university intentions (see Table 3 and 4). Thus, academic and social integration only partially explained the proposed pattern of relationship supporting our hypothesis (*Hypothesis 3*).

Discussion

Behavioral intentions are mental states that are generally assumed to capture commitment or motivation to act in the future (Webb & Sheeran, 2006). Forming a behavioral intention signals the end of the deliberative phase and readiness of a person to perform a specific behavior (Ajzen, 1991; Fishbein & Ajzen, 1975; Gollwitzer, 2019). The theories of attitude-behavior relationship and action control all converge with the idea that intention is a key determinant of behavior. However, despite the theoretical and practical utility of behavioral intentions, they have been vaguely researched in the context of academic attrition.

In the current study, we investigated three potential factors that might facilitate attrition intentions among Norwegian university students: Academic self-efficacy, academic integration, and social integration. Academic skills are generally found to be related to students' persistence (Robbins et al., 2004). The logical remedy for this problem would be to provide explicit training on how to study and what tools to use, but research (e.g., Foerst et al., 2017) has demonstrated a discrepancy between knowledge of academic skills and its

actual implementation. The results of Foerst et al. (2017) study showed that one of the reasons for not using the knowledge were beliefs about abilities to implement this knowledge (i.e., self-efficacy). Also, Wernersbach et al. (2014) conclude that academic self-efficacy is a crucial component in teaching students academic skills. Further, attrition is not a mirror image of staying. Thus, academic skills and self-efficacy might not be equally predictive of students' attrition intentions as of their persistence intentions (Robbins et al., 2004).

Finally, attrition is a complex phenomenon having different causes that are dependent on the outcome variable being measured, i.e., drop-out and transfer out behaviors (Hovdhaugen, 2009). Hence, previous findings indicating the association between academic skills and academic self-efficacy with students' attrition intentions or behaviors might not be equally applicable to different forms of attrition. Thus, the current study investigated if the effect of students' time-management skills on their attrition intention is dependent (mediated) on their academic self-efficacy beliefs and is modified by the category of intention.

The results of the present study demonstrated that academic self-efficacy was a significant mediator of the relationship between academic time-management skills and attrition intentions. Academic self-efficacy indirect-only or fully mediated the proposed relationship with drop-out, transfer university, and transfer study field intentions. Thus, interventions aiming to reduce attrition by teaching students effective time-management strategies and addressing students' academic self-efficacy beliefs might potentially represent an effective approach to both drop-out and transfer out behaviors.

Extensive evidence is available on the relative utility of different study techniques and the importance of self-efficacy for academic success (e.g., Dunlosky et al., 2013; Robbins et al., 2004). However, substantial practical gains have been hard to come by. For example, the findings by Jairam (2019) indicate that despite being explicitly taught on effective study strategies, students continued to use the ones that are commonly found to be less productive.

The author concluded that traditional approaches to teaching students academic skills might be ill-suited practice to reduce attrition and improve retention. One of the reasons for the limited effectiveness of academic skills interventions might be an add-on design of these programs. According to Cathey et al. (2016) and Hattie and Donoghue (2016), an embodiment of academic skills training programs into existing study courses represents a more optimally effective approach to improve students' learning.

As the results of the present study show, the effectiveness of such interventions might also be dependent on students' academic self-efficacy beliefs. However, academic self-efficacy is formed based on previous experiences (Bandura, 1997; Bartimote-Aufflick et al., 2016), making a negative academic history a detrimental factor for students' learning. Fortunately, intervention studies show promising results and indicate that educational programs may enhance academic self-efficacy (e.g., van Dinther et al., 2011; Wernersbach et al., 2014). One potential approach is to incorporate academic skills training into educational programs, stimulating students to apply what they have learned more frequently. Hence, such interventions might lead to improved academic self-efficacy beliefs and other down-stream outcomes such as reduction of attrition rates.

Nevertheless, the results of the present study show that the magnitude of the effect was dependent on the outcome variable being measured. This pattern indicates that despite the potential utility of the discussed interventions, they might not be equally effective in the reduction of different categories of academic attrition. In particular, the largest effects of time-management skills mediated by academic self-efficacy were observed in case of drop-out and transfer study field intentions. The results support previous findings indicating that students transferring to other universities might be equally able as students who persist and more able than those who drop-out entirely (Tinto, 1993; Quinn-Nilas et al., 2019). However,

future research studies are required to validate the present results in terms of actual attrition behavior.

Further, several differences were indicated among traditionally assumed predictors of academic attrition (i.e., social and academic integration) when accounting for the investigated categories of attrition intentions (e.g., Cabrera et al., 1993; Spady, 1970; Tinto, 1975, 1993). First, *academic and social integration* complementary or partially mediated the relationship between time management skills and drop-out intentions. Contrary, both factors indirect-only or fully mediated the same relationship in the case of transfer intentions. The results support the significance of traditionally investigated predictors of academic attrition. Further, the results are in line with Tinto's (1982) elaboration on the limits of his original theory in explaining different categories of academic attrition. Second, a comparison of the proposed mediatory models showed that *cognitive factors* (i.e., academic self-efficacy) had generally larger effects in explaining students' attrition intentions than traditionally considered *social factors* of the academic environment (i.e., academic and social integration). These results support Tinto's (2015) assumptions about the importance of considering a student's perspective and perception when devising interventions or assistance programs.

In sum, the results support previous research evidence on the relevance of Tinto's academic and social integration in understanding students' attrition (Tinto, 1993). However, comparison of observed effect mediated by cognitive and social factors indicates that social constructs might be less effective in counteracting the effect of student's characteristics (i.e., academic skills). Thus, structural changes in educational programs (e.g., more structured study programs) should be accompanied by more specific academic skills interventions (Hovdhaugen, 2011). Finally, the results are in line with previous findings on students' actual behavior providing evidence on the potential utility of attrition intentions as an indicator of actual behavior and research tool.

Limitation and future studies

One of the main limitations of the current study regards the psychometric properties of the attrition intentions scale. Four items used for statistical analyses were an adequate measure differentiating between drop-out and transfer university intentions. However, the questions that were aimed to separate those students who intend to transfer study field cross-loaded on the factor measuring drop-out intentions. A more precise formulation of the response items should be evaluated. Similarly, increasing the number of items measuring attrition intentions is a possible solution and should be addressed in future studies.

Second, the measure of academic self-efficacy that has been used in the current study measures a more general perception of students' academic-related beliefs. Thus, the observed effect sizes might be underestimated (Bandura, 1997). Future research studies might consider devising and validation of a time-management specific scale to validate this assumption.

Third, the results are based on self-report survey data. Hence, we were not able to directly measure academic skills, e.g., how well the student applies a study strategy to a learning task (Tressel et al., 2019). Future studies implementing an experimental and longitudinal study design might be suggested. Bartimote-Aufflick et al. (2016), Van Dinther et al. (2011), and Weinstein et al. (2000) might provide some valuable insight and inspiration in this case.

Fourth, time-management skills are only a single dimension of academic skills that students should develop to become more effective and self-regulated learners. Consequently, we cannot make conclusions if academic self-efficacy has the same mediatory effect in case of other academic skills. However, time-management is a central aspect for different frameworks on academic learning, e.g., approaches to learning and self-regulated learning paradigms (Diseth, 2001; Zimmerman, 1998). For example, from the perspective of

approaches to learning, time management skills belong to a dimension of students' strategic approach to learning (Diseth, 2001). Future studies might consider a further investigation of the role of academic self-efficacy in the relationship of students' deep, surface, and strategic approaches to learning. Students' approaches to learning models and perspectives do not generally include affective components such as self-efficacy beliefs (Heikkilä & Lonka, 2006). According to Pintrich (2004), the absence of affective component represents a serious omission since self-efficacy beliefs are closely related to students' academic performance and self-regulation (Pintrich, 2004). Thus, focusing on three categories of students' approaches (i.e., deep, surface, and strategic) to learning might facilitate our understanding and provide more in-depth insight into mechanisms involved in the formation of different attrition intentions and actual attrition behavior

Finally, actual attrition behaviors (e.g., registry data, university records on student's academic status) should also be considered in future studies. As discussed, attrition intentions are closely related to students' actual behavior (Bean, 1982; Mashburn, 2000). Although behavioral intentions can be assumed to be a close approximation of future behaviors, they might not necessarily lead to the actual implementation of those intentions (Wu & Du, 2012). Further clarification of the indicated mechanisms and their relation to actual behaviors seems to be required.

Conclusion

The findings of the current study indicate the significance of distinction among students' attrition intentions which is in line with previous research on attrition behavior (Hovdhaugen, 2009). Thus, future studies are advised to be explicit on what is the primary outcome variable of their study is. Further, the development of programs aiming to improve academic skills among students should consider the relevance of students' self-efficacy beliefs. Based on the results of the current study, the significance of academic and social

integration constructs has been supported. Nevertheless, the practical utility of interventions addressing only these two constructs might be questioned due to the small effect being found in the current study.

Appendix

Time-management skills. English/Norwegian

- I organize my study time carefully to make the best use of it / Jeg organiserer studietiden min nøye for å utnytte den best mulig.
- I'm pretty good at getting down to work whenever I need to / Jeg er ganske flink å komme i gang med skolearbeidet når jeg trenger.
- I work steadily through the term or semester, rather than leave it all until the last minute / Jeg jobber heller jevnt gjennom hele semesteret fremfor å la alt vente til siste liten
- I generally make good use of my time during the day / Stort sett kan jeg bruke tiden godt gjennom arbeidsdagen

Academic self-efficacy. English/Norwegian

- I am confident that I can acquire the skills necessary to excel within my field of study / Jeg er trygg på at jeg kan tilegne meg ferdighetene som er nødvendige for å utmerke meg innen mitt studiefelt.
- I believe I will do well in my studies, as long as I make an effort / Jeg har tro på at jeg skal gjøre det bra i studiet, så lenge jeg gjør en innsats.
- I expect to do well in my studies / Jeg forventer at jeg skal gjøre det godt i studiet.

Academic integration. English/Norwegian

- I am satisfied with the extent of my intellectual development since enrolling in this university / Jeg er fornøyd med hvor mye jeg har utviklet meg intellektuelt siden jeg startet på universitetet.
- My academic experience has had a positive influence on my intellectual growth and interest in ideas / Mine akademiske erfaringer fra universitetet har hatt positiv innflytelse på min intellektuelle utvikling og faglige interesser.

- My interest in ideas and intellectual matters has increased since coming to this university / Min interesse for ideer og intellektuelle spørsmål har økt siden jeg begynte på universitetet

Social integration. English/Norwegian

- Since coming to this university I have developed close personal relationships with other students / Jeg har utviklet nære personlige relasjoner med andre medstudenter etter at jeg kom til dette universitetet.
- The student friendships I have developed at this university have been personally satisfying / De vennskapene jeg har utviklet med andre medstudenter på dette universitetet har vært personlig tilfredsstillende.
- It has been difficult for me to meet and make friends with other students / Det har vært vanskelig for meg å møte og bli venner med andre studenters

Drop-out intentions. English/Norwegian

- I sometimes consider dropping out of university before graduation / Av og til vurderer jeg å slutte studiene før jeg er ferdig med planlagt studieløp (eksamen, grad).
- I intend to drop out of university before graduation / Jeg kommer til å slutte å studere før jeg er ferdig med planlagt studieløp (eksamen, grad).
- I sometimes think that other job opportunities suit me better than those I can get with my current education / Av og til tenker jeg at andre jobbmuligheter enn de studiene gir, passer bedre for meg.
- I know what I am going to do if I withdraw from my studies / Jeg vet hva blir mitt neste steg hvis jeg avbryter studiene (excluded).

Transfer university intentions. English/Norwegian

- I sometimes consider changing university before graduation / Av og til vurderer jeg å slutte studiene før jeg er ferdig med planlagt studieløp (eksamen, grad).

- I intend to change university before graduation / Jeg kommer til å slutte å studere før jeg er ferdig med planlagt studieløp (eksamen, grad).
- I sometimes think about how my life would be if I change my studyplace/ Av og til tenker jeg at andre jobbmuligheter enn de studiene gir, passer bedre for meg.
- I know what I am going to do if I withdraw from my studies / Jeg vet hva blir mitt neste steg hvis jeg avbryter studiene.

Transfer study field intentions. English/Norwegian

- I sometimes consider changing stuy field before graduation / Av og til vurderer jeg å endre studieretning før jeg er ferdig med planlagt studieløp (eksamen, grad).
- I intend to change study field before graduation / Jeg kommer til å endre studieretning før jeg er ferdig med planlagt studieløp (eksamen, grad).
- I sometimes think about advantages and disadvantages of changing study field/ Av og til vurderer jeg fordeler og ulemper ved å endre studieretning.
- I am waiting for possibility to change my study field / Jeg venter på en mulighet for å endre studieretning.

Table 1. Descriptive results and correlations

	1	2	3	4	5	6	7	n	*M*	*SD*
1. Drop-out Intentions	1.00							697	5.32	2.54
2. Transfer out Intentions (University)	.34**	1.00						697	7.40	3.49
3. Transfer out Intentions (Study Field)	.61**	.53**	1.00					697	7.03	3.68
4. Time-management skills	-.22**	-.02	-.10**	1.00				697	13.96	4.04
5. Academic self-efficacy	-.30**	-.12**	-.19**	.37**	1.00			697	12.83	2.06
6. Social Integration	-.27**	-.23**	-.25**	.16**	.23**	1.00		697	11.18	3.19
7. Academic Integration	-.25**	-.17**	-.23**	.28**	.32**	.35**	1.00	697	11.87	2.49

Note: Spearman's correlations between investigated factors.

**$p < .01$.

References

Aamodt, P. O., & Hovdhaugen, E. (2011). *Frafall og gjennomføring i lavere grads studier før og etter Kvalitetsreformen: En sammenlikning mellom begynnerkullene fra 1999, 2003 og 2005: Vol. 38/2011*. NIFU.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179–211. https://doi.org/10.1016/0749-5978(91)90020-T

Ajzen, I. (2002). Perceived Behavioral Control, Self-Efficacy, Locus of Control, and the Theory of Planned Behavior1. *Journal of Applied Social Psychology*, *32*(4), 665–683. https://doi.org/10.1111/j.1559-1816.2002.tb00236.x

Aljohani, O. (2016). A Comprehensive Review of the Major Studies and Theoretical Models of Student Retention in Higher Education. *Higher Education Studies*, *6*(2), 1–18. https://doi.org/10.5539/hes.v6n2p1

Bandura, A. (1997). *Self-efficacy: The exercise of control*. Freeman.

Baron, R. M., & Kenny, D. A. (1986). The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations. *Journal of Personality and Social Psychology*, *51*(6), 1173–1182. https://doi.org/10.1037/0022-3514.51.6.1173

Bartimote-Aufflick, K., Bridgeman, A., Walker, R., Sharma, M., & Smith, L. (2016). The study, evaluation, and improvement of university student self-efficacy. *Studies in Higher Education*, *41*(11), 1918–1942. https://doi.org/10.1080/03075079.2014.999319

Bäulke, L., Eckerlein, N., & Dresel, M. (2018). Interrelations between motivational regulation, procrastination and college dropout intentions. *Unterrichtswissenschaft*, *46*(4), 461–479. https://doi.org/10.1007/s42010-018-0029-5

Bean, J. (1982). Student attrition, intentions, and confidence: Interaction effects in a path model. *Journal of the Association for Institutional Research*, *17*(4), 291–320. https://doi.org/10.1007/BF00977899

Bean, J., & Eaton, S. B. (2001). The Psychology Underlying Successful Retention Practices. *Journal of College Student Retention*, *3*(1), 73–89. https://doi.org/10.2190/6R55-4B30-28XG-L8U0

Bean, J. P., & Metzner, B. S. (1985). A Conceptual Model of Nontraditional Undergraduate Student Attrition. *Review of Educational Research*, *55*(4), 485–540. https://doi.org/10.3102/00346543055004485

Bernardo, A., Esteban, M.-A., Cervero, A., Cerezo, R., & Herrero, F. J. (2019). The Influence of Self-Regulation Behaviors on University Students' Intentions of Persistance. *Frontiers in Psychology*, *10*. https://doi.org/10.3389/fpsyg.2019.02284

Bollen, K. A. (1989). *Structural equations with latent variables*. John Wiley & Sons, Inc.

Bonsaksen, T. (2018). Psychometric Properties of the Short ASSIST Scales. *Uniped*, *41*(2), 164–181. idunn.no. https://doi.org/10.18261/issn.1893-8981-2018-02-07

Cabrera, A. F., Nora, A., & Castaneda, M. B. (1993). College Persistence: Structural Equations Modeling Test of an Integrated Model of Student Retention. *The Journal of Higher Education*, *64*(2), 123–139. JSTOR. https://doi.org/10.2307/2960026

Cathey, C. L., Visio, M. E., Whisenhunt, B. L., Hudson, D. L., & Shoptaugh, C. F. (2016). Helping When They Are Listening: A Midterm Study Skills Intervention for Introductory Psychology. *Psychology Learning & Teaching*, *15*(3), 250–267. https://doi.org/10.1177/1475725716646319

Cortina, J. M. (1993). What Is Coefficient Alpha? An Examination of Theory and Applications. *Journal of Applied Psychology*, *78*(1), 98–104. https://doi.org/10.1037/0021-9010.78.1.98

Credé, M., & Kuncel, N. R. (2008). Study Habits, Skills, and Attitudes: The Third Pillar Supporting Collegiate Academic Performance. *Perspectives on Psychological Science*, *3*(6), 425–453. https://doi.org/10.1111/j.1745-6924.2008.00089.x

Dalgard, O. S., Mykletun, A., Rognerud, M., Johansen, R., & Zahl, P. H. (2007). Education, sense of mastery and mental health: Results from a nation wide health monitoring study in Norway. *BMC Psychiatry*, *7*(1), 20. https://doi.org/10.1186/1471-244X-7-20

Diseth, Å. (2001). Validation of a Norwegian Version of the Approaches and Study Skills Inventory for Students (ASSIST): Application of structural equation modelling. *Scandinavian Journal of Educational Research*, *45*(4), 381–394. https://doi.org/10.1080/00313830120096789

Diseth, Å. (2007). Students' Evaluation of Teaching, Approaches to Learning, and Academic Achievement. *Scandinavian Journal of Educational Research*, *51*(2), 185–204. https://doi.org/10.1080/00313830701191654

Dunlosky, J., Rawson, K. A., Marsh, E. J., Nathan, M. J., & Willingham, D. T. (2013). Improving Students' Learning With Effective Learning Techniques. *Psychological Science in the Public Interest*, *14*(1), 4–58. https://doi.org/10.1177/1529100612453266

Eisinga, R., Grotenhuis, M., & Pelzer, B. (2013). The reliability of a two-item scale: Pearson, Cronbach, or Spearman-Brown? *International Journal of Public Health*, *58*(4), 637–642. https://doi.org/10.1007/s00038-012-0416-3

Elliott, D. (2010). *Positive perceptions: The role of academic and social self-efficacies in the transition from high school to private four-year colleges*.

Farr-Wharton, B., Charles, M. B., Keast, R., Woolcott, G., & Chamberlain, D. (2018). Why lecturers still matter: The impact of lecturer-student exchange on student engagement and intention to leave university prematurely. *Higher Education*, *75*(1), 167–185. https://doi.org/10.1007/s10734-017-0190-5

Fishbein M., & Ajzen I. (1975). *Belief, attitude, intention and behavior: An introduction to theory and research*. Addison-Wesley.

Foerst, N. M., Klug, J., Jöstl, G., Spiel, C., & Schober, B. (2017). Knowledge vs. Action: Discrepancies in University Students' Knowledge about and Self-Reported Use of Self-Regulated Learning Strategies. *Frontiers in Psychology*, *8*. https://doi.org/10.3389/fpsyg.2017.01288

George, D., Dixon, S., Stansal, E., Gelb, S. L., & Pheri, T. (2008). Time Diary and Questionnaire Assessment of Factors Associated With Academic and Personal Success Among University Undergraduates. *Journal of American College Health*, *56*(6), 706–715. https://doi.org/10.3200/JACH.56.6.706-715

Gillingham, L., Seneca, J., & Taussig, M. (1991). The determinants of progress to the doctoral degree. *Journal of the Association for Institutional Research*, *32*(4), 449–468. https://doi.org/10.1007/BF00992186

Goldfinch, J., & Hughes, M. (2007). Skills, learning styles and success of first-year undergraduates. *Active Learning in Higher Education*, *8*(3), 259–273. https://doi.org/10.1177/1469787407081881

Gollwitzer, P. M. (2019). *Handbook of Theories of Social Psychology: Volume 1* (By pages 526-546; Vol. 1–1). SAGE Publications Ltd. https://doi.org/10.4135/9781446249215

Grosset, J. M. (1993). A Profile of Community College Stop-Outs. *Community College Review*, *20*(4), 51–58. https://doi.org/10.1177/009155219302000406

Hardre, P. L., & Reeve, J. (2003). A motivational model of rural students' intentions to persist in, versus drop out of, high school. *Journal of Educational Psychology*, *95*(2), 347–356. https://doi.org/10.1037/0022-0663.95.2.347

Hattie, AC J., & Donoghue, M G. (2016). Learning strategies: A synthesis and conceptual model. *Npj Science of Learning*, *1*(1). https://doi.org/10.1038/npjscilearn.2016.13

Heikkilä, A., & Lonka, K. (2006). Studying in higher education: Students' approaches to learning, self-regulation, and cognitive strategies. *Studies in Higher Education*, *31*(1), 99–117. https://doi.org/10.1080/03075070500392433

Herrmann, K. J., Bager-Elsborg, A., & McCune, V. (2017). Investigating the relationships between approaches to learning, learner identities and academic achievement in higher education. *Higher Education*, *74*(3), 385–400. https://doi.org/10.1007/s10734-016-9999-6

Hovdhaugen, E. (2009). Transfer and dropout: Different forms of student departure in Norway. *Studies in Higher Education*, *34*(1), 1–17. https://doi.org/10.1080/03075070802457009

Hovdhaugen, E. (2011). Do structured study programmes lead to lower rates of dropout and student transfer from university? *Irish Educational Studies: Transitions into and out of Higher Education*, *30*(2), 237–251. https://doi.org/10.1080/03323315.2011.569143

Hoyt, J. E., & Winn, B. A. (2004). Understanding Retention and College Student Bodies: Differences Between Drop-Outs, Stop-Outs, Opt-Outs, and Transfer-Outs. *NASPA Journal*, *41*(3), 395–417. https://doi.org/10.2202/1949-6605.1351

Hu, L.-T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 1–55. https://doi.org/10.1080/10705519909540118

Jairam, D. (2019). First-year seminar focused on study skills: An ill-suited attempt to improve student retention. *Journal of Further and Higher Education*, *44*(4). https://doi.org/10.1080/0309877X.2019.1582757

Kitsantas, A., Winsler, A., & Huie, F. (2008). Self-Regulation and Ability Predictors of Academic Success During College: A Predictive Validity Study. *Journal of Advanced Academics*, *20*(1), 42–68. https://doi.org/10.4219/jaa-2008-867

Kline, R. B. (2015). *Principles and practice of structural equation modeling* (4 ed.). Guilford Press.

Muennig, P. A. (2007). *Consequences in Health Status and Costs*. Columbia University.

Muthén, L. K., & Muthén, B. O. (1998). *Mplus User's Guide. Eighth Edition. Los Angeles, CA: Muthén & Muthén.*

OECD. (2019). *Education at a Glance 2019*. https://www.oecd-ilibrary.org/content/publication/f8d7880d-en

Pascarella, E. T., & Terenzini, P. T. (1980). Predicting Freshman Persistence and Voluntary Dropout Decisions from a Theoretical Model. *The Journal of Higher Education*, *51*(1), 60–75. https://doi.org/10.1080/00221546.1980.11780030

Pintrich, P. (2004). A Conceptual Framework for Assessing Motivation and Self-Regulated Learning in College Students. *Educational Psychology Review*, *16*(4), 385–407. https://doi.org/10.1007/s10648-004-0006-x

Pintrich, P. R. (1991). *A manual for the use of the Motivated Strategies for Learning Questionnaire (MSLQ).*

Pintrich, P. R. (2000). Chapter 14—The Role of Goal Orientation in Self-Regulated Learning. In M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds.), *Handbook of Self-Regulation* (pp. 451–502). Academic Press. https://doi.org/10.1016/B978-012109890-2/50043-3

Pintrich, P. R., Smith, D. A. F., Garcia, T., & McKeachie, W. J. (1993). Reliability and Predictive Validity of the Motivated Strategies for Learning Questionnaire (Mslq). *Educational and Psychological Measurement*, *53*(3), 801–813. https://doi.org/10.1177/0013164493053003024

Porter, S. R. (2000). *Including Transfer-Out Behavior in Retention Models: Using the NSLC Enrollment Search Data*.

Quinn-Nilas, C., Kennett, D. J., & Maki, K. (2019). Examining explanatory style for failure of direct entry and transfer students using structural equation modelling. *Educational Psychology*, *39*(6), 749–767. https://doi.org/10.1080/01443410.2019.1574340

Raciti, M. M. (2012). Predicting first year student transfer intentions: Do relationships matter? *Special Section: ANZMAC 2010*, *20*(1), 65–72. https://doi.org/10.1016/j.ausmj.2011.10.016

Robbins, S. B., Lauver, K., Le, H., Davis, D., Langley, R., & Carlstrom, A. (2004). Do Psychosocial and Study Skill Factors Predict College Outcomes? A Meta-Analysis. *Psychological Bulletin*, *130*(2), 261–288. https://doi.org/10.1037/0033-2909.130.2.261

Rovai, A. P. (2003). In Search of Higher Persistence Rates in Distance Education Online Programs. *Internet and Higher Education*, *6*(1), 1–16. https://doi.org/10.1016/S1096-7516(02)00158-6

Sauvé, L., Fortin, A., Viger, C., & Landry, F. (2018). Ineffective learning strategies: A significant barrier to post-secondary perseverance. *Journal of Further and Higher Education*, *42*(2), 205–222. https://doi.org/10.1080/0309877X.2016.1224329

Sheeran, P. (2002). Intention—Behavior Relations: A Conceptual and Empirical Review. *European Review of Social Psychology*, *12*(1), 1–36. https://doi.org/10.1080/14792772143000003

Shen, K.-M., Lee, M.-H., Tsai, C.-C., & Chang, C.-Y. (2016). Undergraduate students' earth science learning: Relationships among conceptions, approaches, and learning self-efficacy in Taiwan. *International Journal of Science Education*, *38*(9), 1527–1547. https://doi.org/10.1080/09500693.2016.1198060

Spady, W. (1970). Dropouts from higher education: An interdisciplinary review and synthesis. *A Quarterly Review of Education*, *1*(1), 64–85. https://doi.org/10.1007/BF02214313

Statistics Norway (2019a). Completion rates of students in higher education. Retrieved 7 August 2019, from https://www.ssb.no/en/utdanning/statistikker/hugjen

Statistics Norway (2019b). Facts about education in Norway 2019. Retrieved 7 August 2019, from https://www.ssb.no/en/utdanning/artikler-og-publikasjoner/facts-about-education-in-norway-2019

Steel, P. (2007). The Nature of Procrastination: A Meta-Analytic and Theoretical Review of Quintessential Self-Regulatory Failure. *Psychological Bulletin*, *133*(1), 65–94. https://doi.org/10.1037/0033-2909.133.1.65

Streiner, D. (2015). *Health measurement scales: A practical guide to their development and use* (5th ed.). Oxford University Press.

Steingrímsdóttir, Ó., Næss, Ø., Moe, J., Grøholt, E.-K., Thelle, D., Strand, B., & Bævre, K. (2012). Trends in life expectancy by education in Norway 1961–2009. *Affiliated to the European Epidemiology Federation*, *27*(3), 163–171. https://doi.org/10.1007/s10654-012-9663-0

Svartdal, F., Sale, R. G., Dahl, T. I., Nemtcan, E., & Gamst-Klaussen, T. (2020). Academic Skills and Procrastination: The Role of Academic Self-Efficacy. Manuscript in preparation.

Tinto, V. (1975). Dropout from Higher Education: A Theoretical Synthesis of Recent Research. *Review of Educational Research*, *45*(1), 89–125. https://doi.org/10.3102/00346543045001089

Tinto, V. (1982). Limits of Theory and Practice in Student Attrition. *The Journal of Higher Education*, *53*(6), 687–700. https://doi.org/10.1080/00221546.1982.11780504

Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition* (Second edition.). The University of Chicago Press.

Tinto, V. (2017). Through the Eyes of Students. *Journal of College Student Retention: Research, Theory & Practice*, *19*(3), 254–269. https://doi.org/10.1177/1521025115621917

Tressel, T., Lajoie, S. P., & Duffy, M. C. (2019). A Guide for Study Terminology: Reviewing a Fragmented Domain. *Canadian Psychology/Psychologie Canadienne*, *60*(2), 115–127. https://doi.org/10.1037/cap0000138

van Dinther, M., Dochy, F., & Segers, M. (2011). Factors affecting students' self-efficacy in higher education. *Educational Research Review*, *6*(2), 95–108. https://doi.org/10.1016/j.edurev.2010.10.003

Vossensteyn, H., Kottmann, A., Jongbloed, B., Kaiser, F., Cremonini, L., Stensaker, B., Hovdhaugen, E., & Wollscheid, S. (2015). *Dropout and Completion in Higher Education in Europe executive summary*. Luxembourg : Publications Office.

Webb, T. L., & Sheeran, P. (2006). Does Changing Behavioral Intentions Engender Behavior Change? A Meta-Analysis of the Experimental Evidence. *Psychological Bulletin*, *132*(2), 249–268. https://doi.org/10.1037/0033-2909.132.2.249

Weinstein, C. E., Husman, J., & Dierking, D. R. (2000). *Chapter 22—Self-Regulation Interventions with a Focus on Learning Strategies*. Elsevier Inc. https://doi.org/10.1016/B978-012109890-2/50051-2

Wernersbach, B. M., Crowley, S. L., Bates, S. C., & Rosenthal, C. (2014). Study Skills Course Impact on Academic Self-Efficacy. *Journal of Developmental Education*, *37*(2), 14.

Willcoxson, L. (2010). Factors affecting intention to leave in the first, second and third year of university studies: A semester-by-semester investigation. *Higher Education Research & Development*, *29*(6), 623–639. https://doi.org/10.1080/07294360.2010.501071

Willcoxson, L., Cotter, J., & Joy, S. (2011). Beyond the first-year experience: The impact on attrition of student experiences throughout undergraduate degree studies in six diverse universities. *Studies in Higher Education*, *36*(3), 331–352. https://doi.org/10.1080/03075070903581533

Wolters, C., Won, S., & Hussain, M. (2017). Examining the relations of time management and procrastination within a model of self-regulated learning. *Metacognition and Learning*, *12*(3), 381–399. https://doi.org/10.1007/s11409-017-9174-1

Wu, J., & Du, H. (2012). Toward a better understanding of behavioral intention and system usage constructs. *European Journal of Information Systems*, *21*(6), 680–698. https://doi.org/10.1057/ejis.2012.15

Xuereb, S. (2014). Why Students Consider Terminating Their Studies and What Convinces Them to Stay. *Active Learning in Higher Education*, *15*(2), 145–156. https://doi.org/10.1177/1469787414527395

Zhao, X., Lynch, J. G., & Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and Truths about Mediation Analysis. *Journal of Consumer Research*, *37*(2), 197–206. https://doi.org/10.1086/651257

Zimmerman, B. J. (1998). Academic studing and the development of personal skill: A self-regulatory perspective. *Educational Psychologist*, *33*(2–3), 73–86. https://doi.org/10.1080/00461520.1998.9653292

Zimmerman, B. J. (2002). Becoming a Self-Regulated Learner: An Overview. *Theory Into Practice: Becoming a Self-Regulated Learner*, *41*(2), 64–70. https://doi.org/10.1207/s15430421tip4102_2