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Abstract

University entry and the passage through university is a time of great change. The extent to which students are able to adjust to successfully navigate this change (adaptability) is likely to influence their academic outcomes. Prior research has identified a link between university students' adaptability and academic achievement via behavioral engagement. The current longitudinal study extends this research by examining whether university students' adaptability predicts degree completion via behavioral engagement. Undergraduate students ($N = 186$) were surveyed for their adaptability and behavioral engagement at degree commencement. Their completion status was extracted from the University Records System at the end of the degree. Findings showed that adaptability predicts both positive and negative behavioral engagement, and that negative (but not positive) behavioral engagement predicts degree completion. Adaptability was also found to influence degree completion indirectly via negative behavioral engagement. These findings hold important theoretical and practical implications for educators and researchers seeking to understand how students manage the transition to university and the extent to, and mechanisms by which students' adaptability is associated with university degree completion.

Keywords: *Adaptability; Engagement; Completion; University/College Students*

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Going to university is a life changing experience. Less akin to primary and secondary levels, tertiary education (i.e., university study) involves navigating a significantly less familiar learning environment with increased independence, personal autonomy, and responsibility, and a change in social networks. This is often accompanied by other significant life events that require adjustment, such as moving home, living without parents/guardians, and having to provide for oneself through part-time work (e.g., Pittman & Richmond, 2008). As such, going to university, and the passage through university, is a time of great change. The extent to which students are able to adjust to successfully navigate this change is likely to impact on their academic outcomes. In the present study, we adopt the approach of focusing on adaptability (cognitive, behavioral, and emotional adjustment in the face of change, novelty, and uncertainty: Martin, Nejad, Colmar, & Liem, 2012, 2013) and examine the extent to which university students' adaptability impacts on their behavioral engagement (actions taken by students to promote active involvement in their schooling: Fredricks, Blumenfeld, & Paris, 2004) and degree completion (i.e., whether they completed or withdrew from their studies).

This research is timely and important: although the positive impact of adaptability on behavioral engagement and academic outcomes (achievement) has been documented on secondary school students (e.g., Burns, Martin, & Collie, 2017) the existing literature on university students is sparse. This is problematic given that university represents arguably one of the greatest periods of transition in ones' academic life where the importance of adapting well to the new learning environment may be underscored (Jones, 2008). One of the few studies in this area was a recent investigation among university students (see Collie,

Holliman, & Martin, 2017) finding that first-year undergraduates' adaptability was a direct predictor of both positive and negative behavioral engagement, and an indirect predictor of academic outcomes (achievement – grade point average) via negative (but not positive) behavioral engagement. In the present study, we extend that research with final degree completion data and examine the extent to which university students' adaptability predicts degree completion via their behavioral engagement. Given the global importance of reducing dropout and improving completion rates in higher education (e.g., Crosling, Heagney, & Thomas, 2009; and for the European Commission, Vossensteyn et al., 2015), the serious negative financial, intellectual, and emotional consequences of non-completion (Grebennikov & Shah, 2012), and the fact that many countries have failed to successfully reduce non-completion rates over the last 5 years (e.g., in the UK, Higher Education Statistics Agency, HESA, 2017), this research is paramount. The findings may have important theoretical and practical implications for researchers and educators seeking to understand how students manage the transition to university and the extent to which, and mechanisms by which, students' adaptability is associated with university degree completion.

Adaptability: Conceptual Overview

As noted, adaptability has been conceptualized as the extent to which an individual is able to adjust and modify (manage) cognitive (thoughts), behavioral (actions), and emotional (affective) functioning in the face of changing, novel, and uncertain circumstances, situations, or conditions (Martin et al., 2012, 2013). This tripartite approach to adaptability (Martin et al., 2012, 2013) is grounded in a number of theoretical approaches and traditions that, collectively, provide a basis for further consideration of the construct and its role in the academic outcomes of students at university (see Martin et al., 2012, for a more complete review of the theorizing concerning the tripartite model of adaptability).

Perhaps the most salient conceptual link is that between adaptability and self-regulation. Adaptability falls under the self-regulation umbrella and has been positioned as a sub-construct of self-regulated learning (a self-directive, meta-cognitive process by which individuals monitor, direct, and control their thoughts and actions in order to meet learning goals, build expertise, and improve their skills: Zimmerman, 2002). Adaptability relates most strongly to Winne and Hadwin's (2008) fourth phase of self-regulation (adaptation) where the learner evaluates his/her performance and identifies appropriate cognitive and behavioral adjustments/modifications (adaptations) deemed necessary in order to better meet his/her learning goals. Adaptability extends this work by focusing on self-regulation specifically in the face of change, novelty, and uncertainty (rather than academic tasks and demands) with an affective dimension added to this framework. Adaptability, as operationalized here (with the inclusion of an affective dimension), also extends associated 'lifespan theory of control' approaches (e.g., Heckhausen, Wrosch, & Schulz, 2010) which signify the importance of making cognitive and behavior adjustments/modifications (compensatory control) to promote positive outcomes in one's environment. Further, conceptualizations of adaptability may also be compatible with adversity theories such as resilience, coping, and buoyancy; however, the explicit focus on change, novelty, and uncertainty rather than adversity, difficulty, or setback, for example, differentiates adaptability from these other cognate constructs (Martin et al., 2012, 2013).

In sum, while rooted in theoretical approaches and traditions, adaptability may also extend prior theorizing and offer unique insights regarding university students' behavioral engagement and academic outcomes (i.e., degree completion) – see the sections that follow. In the present study, based on the available research evidence and theory, we estimated a model of relations in which adaptability predicts behavioral engagement, and adaptability and behavioral engagement predict university degree completion (see Figure 1).

<<FIGURE 1 ABOUT HERE>>

Adaptability → Behavioral Engagement

As noted, behavioral engagement refers to the actions taken by students to promote active involvement in their schooling (Fredricks et al., 2004). Theoretically, one would expect a relationship between adaptability and behavioral engagement; for instance, because of its 'enabling capacity' (Martin, Nejad, Colmar, & Liem, 2013) students who are better able to cognitively, behaviorally, and emotionally adapt to adjust to new circumstances, situations, and conditions are more likely to self-regulate in other situations, such as those involving task management or persistence – two adaptive behaviors (Martin et al., 2013). They are also more likely to successfully control the environment and stay engaged with their learning tasks. Further, positive behavioral engagement such as planning, persistence, and task management (Martin, 2007a) stemming from self-regulation theories of motivation (Zimmerman, 2002) necessarily involves managing thoughts and behaviors by evaluating personal attributes, situations, and making necessary adjustments/modifications where required (adaptations) in order to deal effectively with the task at hand. It also follows that students lower in adaptability may anticipate low self-efficacy and poorer performance and be more inclined to manoeuvre defensively such as by self-handicapping or by giving up trying (e.g., disengagement; see Martin et al., 2012).

There is some empirical support for these assertions. In a longitudinal study with 969 high school students, Martin et al. (2013) found that higher levels of adaptability were significantly associated with greater positive behavioral engagement (class participation) and lower levels of negative behavioral engagement (i.e., self-handicapping and disengagement). These findings (on the link between adaptability and academic engagement) have also been replicated in other studies using secondary school students (Burns et al., 2017; Martin et al., 2012; Martin et al., 2013; Martin, Nejad, Colmar, Liem, & Collie, 2015), although fewer

studies exist on these relations at university level. One exception is a recent study using a sample of 186 university students (Collie et al., 2017) which found that first-year undergraduates' adaptability was a significant direct predictor of both positive (planning, persistence, and task management) and negative (self-handicapping, disengagement) behavioral engagement even after controlling for age, gender, and prior achievement. Thus, there are both theoretical and empirical links between students' adaptability and their behavioral engagement, although further research is required to consolidate these relations at university level.

Adaptability and Behavioral Engagement → Degree Completion

A multitude of complex, inter-related factors likely contribute to university completion/dropout (Jones, 2008) whether it be students' personal circumstances, such as their mental health, or their academic resilience and buoyancy (Martin & Marsh, 2009). Research has generally concluded that there is rarely a single reason why students may discontinue from university (Jones, 2008); however, some research implies a direct link between adaptability and degree completion. For instance, a synthesis of research on student retention and success in the UK (Jones, 2008) emphasized the need for universities to support students' transition to higher education given the many challenges associated with the new culture, learning styles, and academic demands (e.g., self-directed autonomous learning). This resonates with the prior theorizing on adaptability. A connected literature on academic adjustment (a student's ability to cope with the academic demands of the new environment: van Rooij, Jansen, & van de Grift, 2017) also provides supporting evidence. van Rooij et al. (2017) investigated whether the engagement profiles of students in their final year of secondary education could predict their academic adjustment and achievement in the first year of university (self-reported grade point average and credits completed). After controlling for age, gender, and type of coursework at secondary school, significant positive associations

were found between engagement, adjustment, credits completed, and academic achievement. There may therefore be a direct link from adaptability to degree completion.

However, other work suggests that adaptability might influence degree completion via behavioral engagement, although very few studies have assessed this at university level. The link between behavioral engagement and degree completion (even in tertiary education) is well-established (see Johnson, Taasoobshirazi, Kestler, & Cordova, 2015). Although there are likely reciprocal relations between behavioral engagement (e.g., persistence) and academic achievement at university (see Allen & Robbins, 2007), student engagement has been identified as a key factor in university student retention and enhancing engagement has been identified as a fundamental strategy for improving student retention and other academic outcomes (Horstmanshof & Zimitat, 2007; see also Burns et al., 2017; Collie, Martin, & Curwood, 2016; Martin et al., 2012; Martin et al., 2013; Martin et al., 2015, for evidence linking behavioral engagement to academic achievement in secondary school, and Schwinger, Wirthwein, Lemmer,, & Steinmayr, 2014, for a meta-analytic review linking self-handicapping [negative behavioral engagement] to academic outcomes). Moreover, a review of the literature concerning online university programs (see Hart, 2012) argued that students low in persistence (a form of positive behavioral engagement)—that is, "continuous or intermittent programme attendance until learners reach their education goals" (Muller, 2008, p. 2)—may be at greater risk of withdrawing from the degree. As van Rooij et al. (2017, p. 10) argue, positive engagement does not always lead to academic success; however "disengaged but well-performing students are at risk to experience a difficult transition to higher education: whereas their intelligence may have made it possible for them to obtain sufficient grades during high school, this may not be the case anymore in higher education, where the demands are higher". Such findings underscore the importance of behavioral engagement in relation to academic outcomes, such as degree completion.

Given that we anticipate links from adaptability to behavioral engagement, and from behavioral engagement to academic outcomes (i.e., university degree completion), we may also anticipate an indirect influence of adaptability on degree completion via behavioral engagement. There is some empirical support for these assertions. For instance, recent literature on secondary school students (Burns et al., 2017) has shown that students' adaptability positively influences both behavioral engagement and subsequent academic outcomes (i.e., achievement). In a rare examination of the constructs at university, Collie et al. (2017) found that first-year undergraduate students' adaptability indirectly predicts academic achievement (grade point average at the end of the first year) via negative (but not positive) behavioral engagement. This provides some preliminary evidence for the important role of adaptability in predicting university students' academic outcomes. However, in both of these studies, academic outcomes were measure by way of achievement (grade point average) rather than completion per se, although these are intimately linked. For example, in a review across 36 studies on indicators of student dropout in high school (Bowers, Sprott, & Taff, 2013) it was reported that low/failing grades and a low number of credits completed are among the most accurate predictors of high school completion. The special focus of examining these constructs in relation to university degree completion is a novel feature of this study. It is also noteworthy that the importance of reducing dropout and improving completion rates in higher education is of paramount importance: this is a global endeavor (Crosling et al., 2009; Vossensteyn et al., 2015), with mostly negative repercussions (Grebennikov & Shah, 2012), that many countries have failed to successfully ameliorate (e.g., in the UK, HESA, 2017).

The Present Study

University entry and the passage through university is a time of great change for students. The extent to which they are able to adjust to successfully navigate this change may

play an important role in their academic outcomes. Prior research identified a link between university students' adaptability and academic achievement via their behavioral engagement (Collie et al., 2017). The present longitudinal investigation extended this research by examining the extent to which university students' adaptability predicts their degree completion (~3 years later), via behavioral engagement. To better understand the unique associations between adaptability, behavioral engagement, and degree completion we controlled for three covariates that have been found to influence the substantive constructs in this study. These include age (younger students have been found to report higher adaptability and positive behavioral engagement than older students, e.g., Martin et al., 2012), gender (females have been found to have higher levels of behavioral engagement than males, Yazzie-Mintz, 2007, and lower overall adjustment at university, Enochs & Roland, 2006), and prior achievement (found to be positively associated with both adaptability and subsequent achievement: Martin et al., 2013). Given that prior research has demonstrated that adaptability is associated with behavioral engagement and achievement among university students, we expected similar associations for degree completion.

Method

Participants and Procedure

This study draws on the same sample as that reported in prior work investigating mid-degree achievement (Collie et al., 2017). Now that the degree has concluded, we investigate students' degree completion as the outcome variable. Thus, as reported in the previous work, all participating students in this study ($N = 186$) were recruited from a single higher education institution (university) in the West Midlands, UK. In total, 67% of those enrolled in first year completed the degree; 33% had withdrawn. Students were University Freshmen (i.e., undergraduates in their first year of study) enrolled in either a single honors psychology degree (BSc Psychology, $n = 149$) or a combined honors degree, which includes psychology

(BSc Psychology and Criminology, *n* = 26; BSc Sport Psychology, *n* = 11). There were 185 full-time students and one part-time student. Three-quarters (75%) of the sample were female (*n* = 139), students were aged between 18 and 35 years (*M* = 19.16, *SD* = 2.32), and six students (3%) disclosed some form of disability. The vast majority of participating students were from the UK (76%; *n* = 142) with others coming from wider Europe (16%), Asia (5%), and also Africa and the Americas (3%). The ethnic background of most students was 'White British', followed by 'Black or Black British–African', 'Other White Background', and 'Asian or Asia British–India'. The selection criteria for participation were not limited to any particular demographic or ability group; all eligible students were invited to take part in this research. Participants completed a paper questionnaire shortly after the program induction. At the end of the degree (~3 years later), students' completion status was extracted from the University Records System along with background characteristics.

Measures

Students responded to a survey comprising items on adaptability and behavioral engagement. Demographic, other background characteristics, and completion data were obtained from students' university records. Psychometric and descriptive statistics for core measures are shown in Table 1 and further elaborated on in Results.

Adaptability. Adaptability was assessed using the Adaptability Scale (Martin et al., 2013). The scale comprises nine items that assess cognitive (e.g., "I am able to think through a number of possible options to assist me in a new situation"), behavioral (e.g., "I am able to seek out new information, helpful people, or useful resources to effectively deal with new situations"), and emotional (e.g., "I am able to reduce negative emotions [e.g., fear] to help me deal with uncertain situations") adaptability. A Likert scale response format is used for each item, with respondents rating themselves on a scale of 1 (strongly disagree) to 7 (strongly agree). Prior psychometric work (e.g., Martin et al., 2012, 2013) has shown that the

scale functions well when the three types of adaptability are combined into a global adaptability factor given their high interrelation. Prior research has also provided evidence of validity for the scale via confirmatory factor analysis and adequate reliability (e.g., Collie et al., 2017; Martin et al., 2012, 2013, 2015). In this study, Cronbach's alpha was .89.

Behavioral Engagement. Behavioral engagement was assessed via the Motivation and Engagement Scale – University/College (MES-UC) (Martin, 2007b). Five factors (4 items per factor) were used to assess engagement. Positive behavioral engagement was assessed via: persistence (e.g., "If I can't understand my university work at first, I keep going over it until I do"), planning (e.g., "Before I start an assignment, I plan out how I am going to do it"), task management (e.g., "When I study, I usually study in places where I can concentrate"). Negative behavioral engagement was assessed via: self-handicapping (e.g., "I sometimes don't study very hard before exams so I have an excuse if I don't do as well as I hoped") and disengagement (e.g., "I've pretty much given up being involved in things at university"). For each item, respondents rated themselves from 1 (strongly disagree) to 7 (strongly agree). Prior work has justified combining these factors into two global positive and negative behavioral engagement factors (e.g., Collie et al., 2017; Martin, 2007a; Yu & Martin, 2014). Measurement properties have been demonstrated among secondary and university students through sound factor structure and reliability (Martin, 2007a, 2009). In this study, Cronbach's alpha for positive behavioral engagement was .92 and for negative behavioral engagement was .85.

Degree Completion. Data on students' degree completion were collected via a University Records System, which contains detailed records of student profiles. Students were designated as Withdrawn (0) or Completed (1). The University Records System does not contain detail on the reasons for degree withdrawal. Indeed, the present study offers a psycho-educational perspective on factors that antecede withdrawal.

Prior Achievement and Demographics. The University Records System was also consulted to gather students' academic achievement prior to enrolment and demographic data (e.g., gender, age). To assess students' previous academic scores (prior to enrolment), the University Records System provides a Universities and Colleges Admissions Service (UCAS) tariff point score for each student, which represents a 'converted equivalent' of their A-Level, Business and Technician Educational Council (BTEC), or other qualification scores. This represents students' prior academic achievement. It is used during the admissions process to make acceptance decisions. We chose this measure because it is reliable and provides an equivalent reflection of students' academic achievement prior to enrolment.

Data Analysis

Reliabilities, means, and standard deviations were all computed using SPSS Version 22. Confirmatory factor analysis (CFA) assessed instrument factor structure and generated latent correlations among factors. The CFA comprised all substantive factors (positive and negative engagement, adaptability, completion) and covariates (age, gender, prior achievement—as single-item indicators, their loadings were set to 1.00 in the CFA; see Table 1). Structural equation modeling (SEM) was then employed to assess the hypothesized model: adaptability predicting positive and negative engagement and completion; positive and negative engagement predicting completion; covariates predicting all factors (Figure 1). CFA and SEM were conducted using M*plus* 7.31 (Muthén & Muthén, 2015) using Maximum likelihood (ML) for estimation. Full information maximum likelihood dealt with missing data (see Muthén & Muthén, 2015, for details). Due to sample size, we aimed to reduce the number of parameters relative to respondents while also harnessing the statistical advantages of modeling latent factors. We therefore estimated latent engagement factors via the scale scores of persistence, planning, and task management to represent a latent positive behavioral engagement factor, and via the scale

scores of disengagement and self-handicapping to represent a latent negative behavioral engagement factor. Additionally, we parceled the nine adaptability items into three scale scores to represent a latent adaptability factor (Little, Cunningham, Shahar, & Widaman, 2002). We estimated a 'fully forward' model in which adaptability predicts behavioral engagement, and adaptability and behavioral engagement predict degree completion. Age, gender, and prior achievement (covariates) were predictors of all substantive factors. Figure 1 shows the hypothesized model. Several fit indexes (Hu & Bentler, 1999) were consulted, namely, the root mean square error of approximation (RMSEA), the comparative fit index (CFI), and the standardized root mean square residual (SRMR). Models were considered acceptable at ≤.08 for RMSEA, ≥.90 for CFI, and ≤.08 for SRMR. We also examined total direct and indirect effects for complete pathways in the model (viz. adaptability → positive engagement → completion; adaptability → negative engagement → completion).

Results

Descriptive and Psychometric Statistics

Means, standard deviations, reliabilities, and mean factor loadings (from the CFA) are shown in Table 1 (note that some of these are unchanged from Collie et al., 2017). Reliabilities for all substantive factors were acceptable, with all αs ≥ .85. Average factor loadings were also sound (ranging from .73 to .75). The fit for the CFA was good, $\chi^2(37) = 56.58$, $p=.001$, RMSEA = .053 (95% CI [0.21, 0.80]), and CFI = .97.

<<TABLE 1 ABOUT HERE>>

Latent correlations in Table 2 are taken from the CFA. Adaptability is significantly correlated with positive behavioral engagement ($r = .77$, $p < .001$) and negative behavioral engagement ($r = -.62$, $p < .001$), but not with degree completion ($r = .12$, $p = .14$). Positive

behavioral engagement ($r = .23$, $p < .01$) and negative behavioral engagement ($r = -.29$, $p <$ .001) are significantly correlated with degree completion.

<<TABLE 2 ABOUT HERE>>

Predicting Degree Completion

SEM explored the hypothesized model (Figure 1). Being a fully forward model, it comprised the same parameters as the CFA and provided a good fit to the data, $\chi^2(37) =$ 56.58, $p=.001$, RMSEA = .053 (95% CI [0.21, 0.80]), and CFI = .97. Findings are shown in Table 3 and Figure 2. Adaptability is a predictor of both positive behavioral engagement ($\beta =$ .77, $p < .001$) and negative behavioral engagement ($\beta = -.62$, $p < .001$), but not degree completion directly ($\beta = -.20$, $p = .22$). In turn, negative behavioral engagement ($\beta = -.28$, $p <$ .05; but not positive behavioral engagement; $\beta = .19$, $p = .27$) predicted degree completion.

<<TABLE 3 ABOUT HERE>>

<<FIGURE 2 ABOUT HERE>>

We then tested for indirect effects. One of the indirect effects was statistically significant: adaptability $\rightarrow$ negative behavioral engagement $\rightarrow$ degree completion ($\beta = .18$, p < .05). There was no statistically significant indirect effect for adaptability $\rightarrow$ positive behavioral engagement $\rightarrow$ degree completion ($\beta = .15$, $p = .27$). The total indirect effect to completion from adaptability, via both positive and negative engagement, was also significant ($\beta = .32$, $p < .01$). There is thus evidence for the significant indirect influence of adaptability on degree completion via negative behavioral engagement.

Discussion

The role of adaptability in university students' behavioral engagement and degree completion

Consistent with our expectations concerning the importance of adaptability for students' academic engagement (Burns et al., 2017; Collie et al., 2017; Martin et al., 2012,

2013, 2015), university students' adaptability was found to predict positive behavioral engagement (persistence, planning, and task management) and lower negative behavioral engagement (disengagement and self-handicapping), beyond the effects of covariates (age, gender, prior achievement). The model indicated that, alongside its direct effect on behavioral engagement, adaptability yielded a significant indirect effect on university students' degree completion via negative (but not positive) behavioral engagement.

These findings were consistent with other research in this area (e.g., Burns et al., 2017; Martin et al., 2012, 2013, 2015), which has shown that students who are able to adjust to different situations and circumstances (involving the regulation of thought, behavior, and emotion) are more likely to self-regulate in other situations by way of higher levels of planning, persistence, and task management, and less self-handicapping and disengagement. Our findings linking engagement to degree completion were also in line with other research into behavioral engagement and its links to student retention and other academic outcomes (Burns et al., 2017; Johnson et al., 2015; Horstmanshof & Zimitat, 2007; Martin et al., 2012, 2013, 2015).

However, contrary to some earlier work in this area with secondary school students (e.g., Martin et al., 2012), but in line with the findings in a university setting (Collie et al., 2017), adaptability was not directly predictive of university degree completion. Instead, negative (but not positive) behavioral engagement was found to be associated with academic outcomes (university degree completion/dropout). The link between negative behavioral engagement and university degree completion was anticipated given prior work (e.g., Martin et al., 2012) and reviews (e.g., Schwinger et al., 2014) in this area; however, the non-significant associations found between positive behavioral engagement and university degree completion were contrary to review work in this areas (e.g., Hart, 2012), but somewhat in line with Collie et al. (2017) who found independent associations between negative (but not

positive) behavioral engagement and academic achievement. In line with Collie et al. (2017), this may be explained in the present study by the fact that both positive and negative engagement were entered simultaneously in the model; thus, accounting for shared variance in the engagement factors (there were bivariate relations between both engagement factors and university degree completion). Further, positive behaviors such as planning, persistence, and task management may be more commonplace (the 'norm') in tertiary education (university) – thereby truncating any possible variance among students. Conversely, the heightened independence and personal autonomy at tertiary levels, and the likely reduction in parental support, may give rise to greater differentiation in negative behavioral processes (i.e., self-handicapping and disengagement) – a conclusion supported by the standard deviation scores in the present study. Adaptability seems to influence university degree completion via its effects on negative (but not positive) behavioral engagement, which is in line with the findings in Collie et al. (2017) on academic achievement.

Educational implications

As noted by van Rooij et al. (2017), the added benefit of studying factors such as adaptability and engagement lies in the fact that these constructs are alterable, unlike other predictive factors such as age, gender, and prior achievement – and to some extent, intelligence and socio-economic status. The findings of the present study provide support for the value of targeting adaptability and/or negative behavioral engagement as part of an intervention to avoid university non-completion. In the context of adjusting to change, novelty, and uncertainty at university, adaptability can be promoted. For example, Crosling et al. (2009) emphasize the importance of supporting students' transition to university: it was argued that institutions might provide students with opportunities and dialogue (e.g., at the degree induction) to adjust (cognitively, behaviorally, and emotionally) to the higher education environment (i.e., culture, expectations, teaching and assessment, and learning) in

order to ease the transition and reduce the likelihood of degree withdrawal. Moreover, building on prior work on the adaptable profile (Martin et al., 2013), which posits a profile of the adaptable student (who is higher in self-regulation and classroom participation and lower in self-handicapping, for example), understanding the connections between adaptability, engagement, and degree completion may enable educators to identify those who may have difficulties adapting to the university environment. They may then aim to remediate this e.g., by supporting students to recognize uncertainty and novelty that might demand an appropriate regulatory response, appropriately adjust their cognition, behavior, and emotions, recognize the importance of these regulatory responses and to improve/adjust them if necessary (Martin et al., 2015). This adjustment might enable the individual (student) to respond more constructively to circumstances and conditions of uncertainty and novelty leading to a heightened sense of control and a reduction of failure dynamics (e.g., disengagement and self-handicapping) which, in turn, might enhance their academic achievement.

Interventions might also target negative behavior engagement directly as a means to enhance degree completion. In line with Schwinger et al. (2014), educational interventions to enhance academic outcomes (achievement, but also conceivably degree completion) might focus on identifying and addressing maladaptive behavioral engagement patterns, such as self-handicapping. For instance, educators might create a learning environment (and associated activities) which demonstrate (and signify) the important association between effort and achievement. Any activities which promote students' understanding of the relationship between their actions and outcomes would be useful to illustrate how consequences are contingent upon what students do. This will promote control and therefore may help to reduce levels of disengagement. Moreover, if educators can emphasize that mistakes are a useful way to identify areas of improvement and further development in a

formative way and, thus, do not necessarily reflect a lack of self-worth, then the student may become less fearful of failure and in turn less likely to self-handicap (Covington, 1992).

Limitations and future directions

In the present study there are several limitations that are important to recognize when interpreting findings. First, unlike our measure of adaptability, which captured cognitive, behavioral, and affective dimensions, our measure of engagement focused solely on 'behavioral' engagement as it represents the outward manifestations of motivation (Skinner et al., 2009) and has been consistently found to be associated with academic outcomes (e.g., Johnson et al., 2015). However, other studies (e.g., van Rooij et al., 2017) have delineated engagement to capture other dimensions such as cognitive and intellectual engagement, and even affective engagement (e.g., Finn, 1989) and further research might explore the relationship between the other engagement factors, adaptability, and university degree completion. Second, it remains plausible that other factors that were not included in the present study might have exerted influence over some of the observed relations. For instance, in a study using a younger sample of secondary school students (Martin, Yu, Ginns, & Papworth, 2017), the strength of association between adaptability and engagement (two constructs in this study) was stronger for Chinese students, relative to students in North America and the United Kingdom. This implies that cultural differences might be considered in the study of university students. Moreover, as acknowledged earlier, other factors such as students' personal circumstances (e.g., mental health, Jones, 2008) and protective factors such as their academic resilience and buoyancy (Martin & Marsh, 2009) might also help account for variance in university completion/dropout. This study also focused on individual-level characteristics associated with university degree completion; however, some (e.g., Vossensteyn et al., 2015) have argued for more research at the institutional level (e.g., university culture, teaching and learning policies, composition of the student body) and the

level of the higher education system (e.g., access, selectivity, financial support, opportunities for movement in the system). Moreover, with regards to the withdrawal measure, the University Records System did not contain detail on the reasons for degree withdrawal. While the present study offers a psycho-educational perspective on factors that antecede withdrawal future work might explore the reasons why students withdrew and the extent to which this may have been related to academic performance.

Conclusion

The aim of the present longitudinal study was examine the extent to which university students' adaptability predicts their degree completion via behavioral engagement. Findings showed that, beyond the effects of age, gender, and prior achievement, adaptability yielded significant direct effects on both positive and negative behavioral engagement (but not university degree completion), and significant indirect effects on university degree completion through negative (but not positive) behavioral engagement. These findings (the non-significant pathways) were inconsistent with some of the research on secondary school students, but support and extend recent work on university students (e.g., Collie et al., 2017). Together, these findings hold theoretical and practical implications for educators and researchers who may seek to understand how students manage the transition to university and the extent to, and mechanisms by which students' adaptability is associated with university degree completion.

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Table 1

Summary Statistics for Modeled Variables

	Mean (or %)	Std. Dev.	α	Mean CFA loading
Age	19.16	2.32	-	1.00
Gender (FM/M)	75%/25%	-	-	1.00
Prior Achievement	298.26	81.82	-	1.00
Adaptability	5.12	.93	.89	0.74
Positive Engagement	5.26	.90	.92	0.73
Negative Engagement	2.39	1.00	.85	0.75
Complete (N/Y)	33%/67%	-	-	1.00

Note: Age was measured in years; adaptability, positive engagement and negative engagement were scored from 1-7 with higher scores corresponding to higher levels of each construct; Complete was scored from 0 (No) to 1 (Yes). Covariates (age, gender, prior achievement) and Complete are single-item indicators and so reliability is not computed and the factor loadings are set at 1.00.

Table 2

Bivariate Latent Correlations Between Modeled Variables

	1	2	3	4	5	6	7
1. Age	-						
2. Gender (M)	.08	-					
3. Prior Achievement	.12	.10	-				
4. Adaptability	.14	.07	.10	-			
5. Positive Engagement	.12	-.09	.05	.77***	-		
6. Negative Engagement	-.13	.10	-.11	-.62***	-.67***	-	
7. Complete (N/Y)	-.01	-.15*	.01	.12	.23**	-.29***	-

*p < .05; **p < .01; ***p < .001

Table 3

Standardized Beta Coefficients in SEM (Full Model)

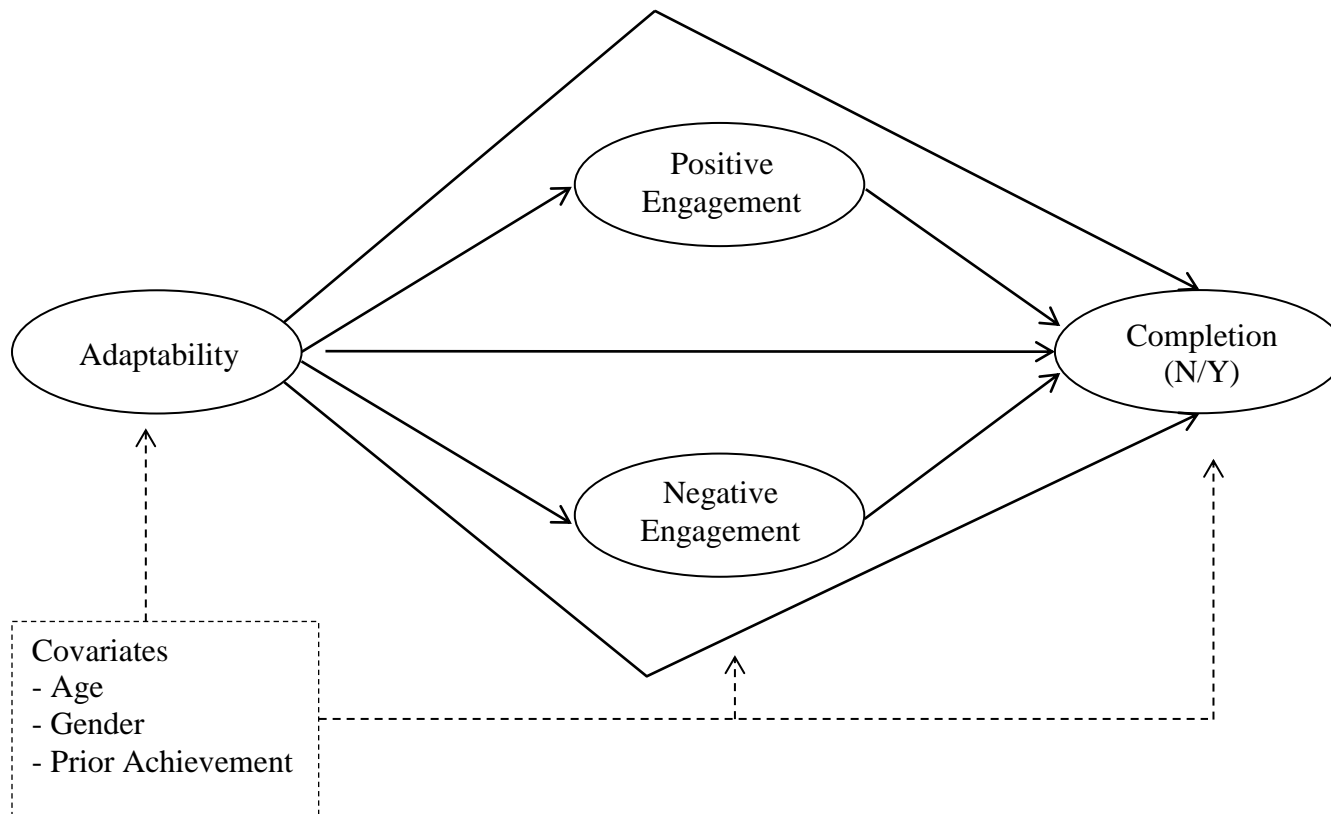|		Endogenous Variables		
	Adaptability	Positive Engagement	Negative Engagement	Complete (N/Y)
Age	.12	.03	-.05	-.03
Gender (M)	.05	-.14*	.15*	-.09
Prior Achievement	.08	-.02	-.06	.01
Adaptability		.77***	-.62***	-.20
Positive Engagement				.19
Negative Engagement				-.28*

*p < .05; **p < .01; ***p < .001

Figure 1. Hypothesized model. Solid paths represent hypothesized links and dashed paths represent additional links tested for completeness.
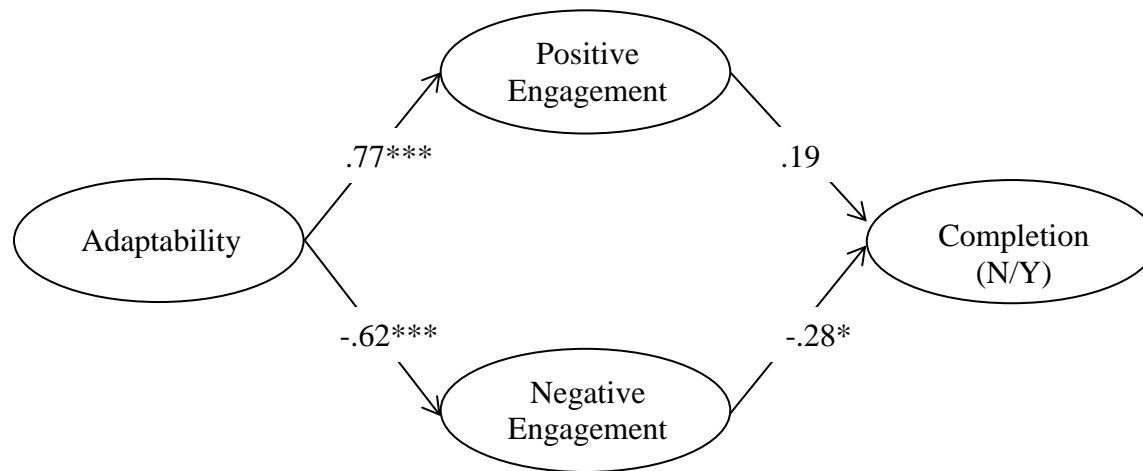
Figure 2. Substantive parameters from SEM. Results involving covariates are shown in Table 3.
*p < .05, **p < .01, ***p < .001.