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Article abstract

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REACHING THE FINISH LINE: PERSONALITY AND PERSISTENCE IN POST-SECONDARY EDUCATION

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Abstract

Few studies have examined the contribution of individual psychological factors to long-term indicators of academic success. This study examines the influence of personality and individual difference factors in relation to retention. In this study, 290 Canadian undergraduate students completed measures of personality, resiliency, perfectionism, and trait Emotional Intelligence in the first semester of their first year, and enrolment status was collected at the end of each academic year for four years. Multinomial logistic regression analysis indicated that only high school grade point average (GPA) and being male predicted a higher likelihood of withdrawing from the program or delaying degree completion, compared to those who completed. The need for future studies with larger samples and consideration of more complex relationships between factors is highlighted.

Keywords: post-secondary, retention, persistence, academic success, personality

Résumé

Peu d'études ont examiné la contribution des facteurs psychologiques individuels aux indicateurs de la réussite scolaire à long terme. Cette étude examine l'influence de la personnalité et des différences individuelles par rapport à la persévérance scolaire. 290 étudiants canadiens de premier cycle ont rempli des formulaires de mesure de la personnalité, de la résilience, du perfectionnisme et du trait d'intelligence émotionnelle (IE) au cours du premier trimestre de leur première année, et leur statut d'inscription a été recueilli à la fin de chaque année universitaire pendant quatre ans. Une analyse de régression logistique multinomiale a indiqué que seuls la moyenne générale obtenue lors des études secondaires et le fait d'être un homme prédisaient une probabilité plus élevée de décrochage du programme ou de retardement de l'obtention du diplôme, par rapport aux personnes l'ayant obtenu. Cette étude souligne la nécessité d'études futures portant sur des échantillons plus importants et prenant en compte des relations plus complexes entre les facteurs.

Mots-clés : postsecondaire, rétention, persistance, réussite scolaire, personnalité

Introduction

Enrolment in post-secondary education across North America has been steadily increasing for decades (Association of Universities and Colleges of Canada, 2011; Snyder et al., 2016). This rising demand for higher education is likely due to the significant economic, health, and social benefits that are associated with the completion of a post-secondary education (Riddell, 2006). While there are many indicators of success in academia (e.g., satisfaction, achievement), persistence to graduation is an important research focus due to the significant

positive outcomes associated with completion (Riddell, 2006), as well as the appreciably high proportion of individuals who do not complete their programs (Grayson & Grayson, 2003; Parkin & Baldwin, 2009).

There is a substantial research literature exploring factors that predict retention or persistence (terms that are often used interchangeably), however most of this research has focused on demographic, institutional, and preparatory academic factors (Barbera et al., 2020; Peltier et al., 2000; Schneider & Preckel, 2017; Westrick et al., 2015). Although research in recent years has indicated increased interest in psychological predictors of academic success (Bowman et al., 2019; Richardson et al., 2012; Stajkovic et al., 2018; Vedel, 2014), there remains a significant lack of investigations that examine psychological factors that contribute to long-term indicators of academic success such as retention and persistence (Burrus et al., 2013). To address this gap, the present study aimed to expand on the authors' previous work that examined personality (i.e., Big Five personality traits: extraversion, openness, agreeableness, neuroticism, conscientiousness) and individual difference factors (i.e., perfectionism, resiliency, trait emotional intelligence) as predictors of short-term academic success (i.e., grade point average [GPA]) with a cohort of students during a typical four-year program (Wilson et al., 2019). The objective of the current study was to examine the previously explored factors of personality, resiliency, emotional intelligence (EI), and perfectionism as predictors of retention after four years of post-secondary study.

Theoretical Models of Student Retention

Traditionally, two theories have dominated the post-secondary retention literature. Tinto's Theory of Student Departure (Tinto, 1975, 1993) largely focuses on institutional interactions and student integration, while Bean's Model of Student Attrition (Bean, 1980, 1983) expands on Tinto's theory by incorporating external factors that may play an important role in attrition. While both models consider individual student characteristics (e.g., abilities, previous schooling, goals), the influence of psychological variables is either excluded or lacking considerably in breadth. Thus, the theoretical basis for the present study is drawn from the more recent Working Model of Student Persistence (WMSP) that was devel-

oped to improve upon the earlier models by including more contemporary research, as well as explain retention beyond the first year of post-secondary study (Burrus et al., 2013).

One of the key features of the WMSP is the inclusion of a broader assortment of psychological predictors. For instance, the psychosocial components of this model consider personality traits such as conscientiousness and openness as factors that set students up to persist, and other traits such as agreeableness, extraversion, optimism, and emotional stability are considered factors that keep students persisting (Burrus et al., 2013). While the WMSP provides a theoretically appropriate basis for research objectives that are focused on psychological predictors of persistence, the authors note that greater empirical support is needed to fully realize the impact of psychosocial factors on persistence, particularly beyond the first year of study.

Relevance of Psychological Factors to Post-Secondary Success

Historically, much of the research surrounding post-secondary retention has centred primarily on demographic (e.g., gender, ethnicity, socio-economic status), institutional (e.g., institution size and selectivity), and academic preparatory factors (e.g., SAT scores, high school grades); and this has not changed in the last decade (Barbera et al., 2020). While psychological factors such as perceived academic control (e.g., Respondek et al., 2020), motivation (e.g., Slanger et al., 2015), and student engagement (e.g., Flynn, 2014) have also been implicated as relevant to retention, the role of personality and other individual difference factors is severely understudied in the long term (Burrus et al., 2013). The relationship between personality and short-term academic success, however, has become increasingly evident. Meta-analytic findings have confirmed the positive impact of conscientiousness and EI on short-term academic achievement, as measured by GPA (Richardson et al., 2012; Schneider & Preckel, 2017). This aligns with qualitative research that has revealed that students perceive several personality and individual difference factors as relevant to achieving their goals in post-secondary education (Stelnicki et al., 2015).

Thus, these findings suggest that further study of a broader array of psychological indicators and their im-

pact on long-term retention is warranted. This was the driving factor behind the current program of study, which includes an examination of both the short-term and longitudinal impacts of personality, resiliency, trait EI, and perfectionism on student success and retention. The authors previously reported preliminary findings that extraversion, conscientiousness, perfectionism, and one facet of resiliency (i.e., mastery) are predictive of first-year GPA (Wilson et al., 2019). The current study expands on these findings by examining the impact of personality on the same students' retention status after four years of their undergraduate program. The following sections describe four variables that were previously examined by the authors (see Wilson et al., 2019) and by extension, are the focus of the present longitudinal study.

Personality

The Big Five model of personality (conscientiousness, extraversion, neuroticism, openness, agreeableness) represents five broad personality factors that are frequently studied in relation to academic success (e.g., Vedel, 2014). The literature surrounding the relationship between personality (i.e., the Big Five) and academic success is plentiful, but has been largely focused on short-term indicators such as GPA. Overall, the findings indicate that conscientiousness is the most robust predictor of academic success (Poropat, 2009; Richardson et al., 2012; Vedel, 2014). Previous findings also suggest that openness (e.g., Moses et al., 2011) and agreeableness (e.g., Saklofske et al., 2012) have small positive relationships with GPA and other indicators of short-term academic success, while neuroticism (e.g., Chamorro-Premuzic & Furnham, 2003; Noftle & Robbins, 2007) and extraversion (e.g., Vedel, 2014; Wilson et al., 2019) are less consistently related to academic success. Only recently has the relationship between personality and persistence been explored with findings indicating that conscientiousness was the only significant predictor of retention after three years of study (Bipp et al., 2020). However, more longitudinal research is needed to determine the relationship between personality and degree completion.

Perfectionism

Perfectionism, a personality trait characterized by self-criticism, setting tremendously high standards, and

striving for perfection (Flett & Hewitt, 2002; Frost et al., 1990) may be adaptive (i.e., perfectionistic strivings) or maladaptive (i.e., perfectionistic concerns) in relation to a variety of outcomes (Stoeber & Otto, 2006). As with resiliency, perfectionism has yet to be studied in relation to persistence or retention in post-secondary education; however, much more work has examined perfectionism in relation to short-term predictors of academic success. The overall consensus is that perfectionistic strivings are associated with higher GPA, while perfectionistic concerns are associated with lower GPA and other poor academic outcomes (Madigan, 2019; Osenk et al., 2020). Further, Pritchard and Wilson's (2003) findings indicate that perfectionism predicts GPA but does not predict intention to withdraw from post-secondary studies, although this finding may be impacted by the lack of theoretical perfectionism factors captured in the chosen measure. Given the diverging impact of different types of perfectionism on academic achievement, it would be particularly efficacious to determine what impact, if any, the adaptive and maladaptive factors of perfectionism have on long-term persistence to graduation.

Resiliency

Resiliency is an individual's capacity to adapt in the face of adversity (Masten, 2001, 2014). While resiliency has been theoretically implicated as relevant to post-secondary persistence (Parkin & Baldwin, 2009), empirically it has been severely under-studied in the context of success and achievement. Findings to date from a limited number of studies suggest that resilience predicts GPA in the short-term (Hartley, 2011; Sweet et al., 2019), and that resilience is marginally predictive of the number of credits completed, particularly for individuals experiencing greater psychological distress (Hartley, 2013). Additionally, several studies have examined the relationship between specific underlying factors and facets of resilience and student success. For instance, self-efficacy and optimism (e.g., Sweet et al., 2019), as well as social support (e.g., Mishra, 2020), have been implicated as positive predictors of GPA. Further, earlier work by Wilson and colleagues (2019) found that the resilience factor of mastery predicts GPA, but this mechanism operates through an individual's study skills. While no studies to date have examined resilience as a predictor of persistence, a recent study examined resilience in relation to drop-out intentions and found that reporting

greater resilience was associated with less likelihood of indicating intention to withdraw (Smith et al., 2020). However, it remains unclear if resilience has any actual impact on persistence through graduation.

Emotional Intelligence (EI)

EI, assessed as a trait, portrays an individual's self-perceptions of their emotional competencies (Petrides et al., 2016). Emotional competencies encompass several facets that are important for success in many life domains including empathy, emotion regulation and management, emotion perception, and impulse control (Petrides, 2009). EI has been studied extensively in recent years as a predictor of short-term indicators of academic success; meta-analytic findings indicate it has a small to moderate effect on academic performance (MacCann et al., 2020). However, to date, only two studies have examined EI and its relationship with persistence to graduation. Findings suggest that two EI facets—social responsibility and impulse control—are most strongly related to having graduated at five-year follow-up (Sparkman et al., 2012). Additionally, among gifted students, those who initially reported low EI scores upon entry to post-secondary school were less likely to complete their degree (Parker et al., 2017). However, the relationship between EI and retention has yet to be explored in relation to other relevant individual difference factors, which is necessary given the demonstrated overlap between EI and other personality factors (e.g., van der Linden et al., 2017).

Objectives and Hypotheses

The relevance of individual psychological factors to academic success in the short term is undisputed. However, much less research has examined these factors and their potential impact on long-term success, such as persistence to graduation. Thus, the aim of the present study is to expand on the previous work (see Wilson et al., 2019) that explored personality, resiliency, trait EI, and perfectionism as predictors of short-term academic success (i.e., GPA), and examine the longitudinal impact of these factors on student retention. This was achieved by following the same cohort of students across four years of their academic program. Gender and the well-established predictor high school GPA (e.g., Schneider & Preckel, 2017) will be included as control variables. Specif-

ically, we hypothesize that: conscientiousness and trait EI will positively predict retention, based on the more consistent findings from previous literature implicating these variables as predictors of academic success. Given the previous lack of formal investigation and consensus of the relation between the other four Big Five personality traits, as well as resiliency and perfectionism on post-secondary retention, the examination of these factors in the present study is exploratory in nature.

Method

Participants and Procedure

A total of 290 first-year undergraduate students from a large Canadian university consented to participate. Nine participants were excluded due to incompletion, or inability to obtain university registrar data, which resulted in 281 participants being included in analyses. Participants ranged in age from 17 to 38 years (M = 18.01; SD = 1.45). Additional demographic information including gender, ethnicity, university residency status, and program of study can be found in Table 1.

Participants were first recruited using convenience sampling through the university's research participant recruitment pool in the fall of 2016. Eligibility included being in the first year of study and registered as a full-time student. Consenting participants completed a number of psychological measures online and were compensated with credits to satisfy course requirements and an entry to a draw for gift cards. This component of the data collection occurred at one time point only, as personality and individual difference factors are largely considered stable and not expected to change substantially over time (e.g., Costa et al., 2019). Additionally, participants consented to have their post-secondary academic data (i.e., yearly GPA, enrolment status) obtained from the university registrar at that time (i.e., time of completion of online measures), as well as across the subsequent four years of study. Overall GPA and enrolment status were obtained from the university registrar's office on four separate occasions, at the end of each academic year from 2016–2020. Portions of this data (overall GPA) were reported in the initial preceding study, and only enrolment status is considered in the present study (see Wilson et al., 2019).

Table 1

Participant Gender, Ethnicity, Residency Status, and Program of Study

Demographic Variable	Frequency (Percentage)
Gender	
Female	220 (78%)
Male	61 (22%)
Ethnicity	
Caucasian	127 (45%)
Chinese	87 (31%)
South Asian	27 (10%)
Other	40 (14%)
Residency Status	
Domestic	242 (86%)
International	31 (11%)
Permanent Resident	7 (3%)
Program of Study	
Health/Medical Sciences	126 (45%)
Business Management	53 (19%)
Social Sciences	49 (17%)
Science	38 (14%)
Arts & Humanities	9 (3%)
Other	5 (1.8%)

Individual Differences Factors

Measures

Personality. Personality was assessed using the Mini-International Personality Item Pool (Mini-IPIP; Donnellan et al., 2006). This 20-item scales captures the Big Five personality factors (conscientiousness, agreeableness, extraversion, openness, neuroticism) on a 5-point Likert scale ranging from 1 (*very inaccurate*) to 5 (*very accurate*). The Mini-IPIP has shown acceptable validity and reliability in previous studies (e.g., Baldasaro et al., 2013).

Perfectionism. Perfectionism was assessed using the Big Three Perfectionism Scale (BTPS; Smith et al.,

2016). This scale consists of 45 items on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), and measures Rigid, Self-Critical, and Narcissistic Perfectionism. Good reliability and validity of the BTPS have been reported (Casale et al., 2020).

Resiliency. Resiliency was assessed using the Resiliency Scale for Young Adults (RSYA; Prince-Embury et al., 2017). This scale consists of 50 items on a 5-point Likert scale ranging from 0 (*never*) to 4 (*almost always*). The measure captures three overarching resiliency factors: sense of mastery, sense of relatedness, and emotional reactivity. The RSYA has demonstrated good validity and reliability in previous research (Wilson et al., 2019).

Trait EI. Trait EI was assessed using the Trait Emotional Intelligence Questionnaire-Short Form (TEIQue-SF; Petrides & Furnham, 2004). This scale consists of 30-items on a 7-point Likert scale ranging from 1 (*completely disagree*) to 7 (*completely agree*). The TEIQue-SF has demonstrated good validity and reliability in previous research (e.g., Siegling et al., 2015).

Data Analytic Strategy

Preliminary analysis included descriptive statistics and bivariate correlations of all independent variables. Multinomial logistic regression was used to examine the relationship between the independent predictor variables and retention. Retention is operationalized as the university registrar's completion status at the end of four full terms (concluding in June 2020). Completion status consists of three possible categories: degree completed, delayed, or withdrawn. The completed group includes those that had their degree conferred on or before June 2020, the delayed group consists of those who have not had their degree conferred and are still actively enrolled or attending, and the withdrawn group are those who did not register for the final or previous terms. All analyses were conducted using SPSS version 24.0.

Results

Descriptive statistics, Cronbach alpha reliabilities, and bivariate correlations for the continuous independent variables included in our study are displayed in Table 2. Trait EI, the adaptive dimensions of resiliency (mastery and relatedness), and personality (all except neu-

roticism) all had significant, positive intercorrelations. Similarly, emotional reactivity, each dimension of perfectionism, and neuroticism also had significantly positive correlations, with the exception of narcissistic perfectionism and neuroticism.

A key ordinal independent variable was self-reported high school GPA. The frequency breakdown of the sample was as follows: 20.3% (n = 57) attained 95–100, 45.9% (n = 129) attained 90–94%, 31.0% (n = 87) attained 85–89%, 2.1% (n = 6) attained 80–85%, and 7% (n = 2) attained 75–79%. As for the dependent variable, 59.8% (n = 168) of the sample completed their degree, 29.2% (n = 82) of the sample were delayed, and 11% (n = 31) of students withdrew from their undergraduate studies.

We then performed a multinomial logistic regression to model the relationship between all of the independent variables and membership in the three academic retention groups (i.e., degree completed, delayed, or withdrawn). All independent variables were added simultaneously into the model. A .05 criterion of statistical significance was used for all tests. The reference group was students who completed their degree. Therefore, each predictor variable has two parameters, one for predicting membership in the delayed group as opposed to the completed group, and one for predicting membership in the withdrawn group as opposed to the completed group.

As seen in Tables 3 and 4, only self-reported high school GPA significantly contributed to the prediction of student success in both the delayed and withdrawn groups. While controlling for all other variables, for each one unit increase in high school GPA, the odds of being in the withdrawn group as opposed to the completed group decreased by .88 and the odds of being in the delayed group as opposed to completed group decreased by .87. Gender also significantly predicted retention, but only for the delayed group. Specifically, being male, rather than female, resulted in a 2.10 increase in the odds of being in the delayed group as opposed to the completed group.

Discussion

This study expanded upon previous findings that examined personality and individual difference factors as predictors of short-term student success (i.e., first-year university GPA) (Wilson et al., 2019) by re-examining these variables as predictors of long-term post-secondary success (i.e., retention/persistence). Contrary to hy-

Table 2

Descriptive Statistics and Bivariate Correlations for the Independent Variables

Variable	M	SD	α	1	2	3	4	5	6	7	8	9	10	11	12
1. Mastery	2.75	.53	.89	1.00	.68	-.45	-.08[a]	-.40	.02[a]	.74	.35	.24	.31	-.43	.26
2. Relatedness	2.77	.52	.89	.68	1.00	-.41	-.24	-.46	-.13	.68	.47	.34	.22	-.39	.21
3. Emotional Reactivity	1.62	.62	.90	.45	-.41	1.00	.27	.49	.28	-.59	-.13	-.13.05	-.33	.65	-.23
4. Rigid Perfectionism	3.00	.88	.92	-.08[a]	-.24	.27	1.00	.73	.55	-.18	-.09	-.25	-.02[a]	.24	-.02[a]
5. Self-Critical Perfectionism	3.18	.76	.93	-.40	-.46	.49	.73	1.00	.35	-.51	-.21	-.19	-.20	.45	-.10[a]
6. Narcissistic Perfectionism	2.21	.65	.92	.02[a]	-.13	.28	.55	.35	1.00	-.10[a]	.12[a]	-.35	-.07[a]	.09[a]	-.18
7. Trait EI	4.71	.76	.89	.74	.68	-.59	-.18	-.52	-.10[a]	1.00	.42	.33	.36	-.58	.28
8. Extraversion	2.95	.96	.80	.35	.47	-.13	-.09[a]	-.21	.11[a]	.42	1.00	.28	-.02[a]	-.22	.14
9. Agreeableness	3.82	.75	.73	.24	.34	-.13	-.25	-.19	-.35	.33	.28	1.00	.05[a]	-.03[a]	.28
10. Conscientiousness	3.47	.81	.70	.31	.22	-.33	-.02[a]	-.20	-.07[a]	.36	-.02[a]	.05[a]	1.00	-.19	.08[a]
11. Neuroticism	2.89	.76	.58	-.43	-.39	.65	.24	.45	.09[a]	-.58	-.21[a]	-.03[a]	-.19	1.00	-.10[a]
12. Openness	3.53	.77	.73	.26	.21	-.23	-.02[a]	-.10[a]	-.18	.28	.14	.28	.08[a]	-.10[a]	1.00

Note: a = nonsignificant correlation. All other correlations are significant at $p < .05$

potheses, conscientiousness and trait EI did not significantly predict retention after following the original cohort of university students from first to fourth year. Additionally, none of the other exploratory variables were predictive of withdrawing, completing, or being delayed in the present follow-up study. However, in line with well-established findings from previous literature (e.g., Schneider & Preckel, 2017), high school GPA was predictive of both delaying and withdrawing from university education. Further, results indicated that male students were less likely to complete on time.

Overall, the frequency of persistence to graduation in the present study aligns with previous numbers reported across North America (Grayson & Grayson, 2003; Organisation for Economic Co-operation and Development, 2016), although the number of students who withdrew (11%) in the present study is slightly lower than what has been reported in previous years in Canada (Finnie & Qiu, 2008; Parkin & Baldwin, 2009; Statistics Canada, 2008). However, a sizeable portion of our sample neither completed nor withdrew (29%); presumably some of those students will continue to completion, while a smaller

Table 3

Multinomial Logistic Regression Model of Predictors Associated with Student Retention (Withdrawn Group)

Predictors	B (SE)	ExpB	95% CI	Wald χ^2	P
			Full model		
Intercept	6.62 (5.43)			1.49	.223
Gender (Male)	.91 (.50)	2.48	.94 – 6.56	3.35	.067
HS GPA	-.13 (.05)	.88	.79 – .97	6.01	.014
Personality					
Extraversion	.01 (.27)	1.01	.59 – 1.70	.00	.985
Agreeableness	.45 (.35)	1.57	.79 – 3.12	1.69	.194
Conscientiousness	-.32 (.28)	.73	.42 – 1.26	1.31	.253
Neuroticism	.33 (.40)	1.40	.64 – 3.06	.69	.406
Openness	-.06 (.30)	.94	.52 – 1.69	.05	.826
Perfectionism					
Rigid Perfectionism	.46 (.43)	1.58	.68 – 3.68	1.13	.287
Self-Critical Perfectionism	-.45 (.50)	.64	.24 – 1.69	.81	.367
Narcissistic Perfectionism	.17 (.43)	1.19	.51 – 2.77	.16	.689
Resiliency					
Mastery	20 (.65)	1.22	.34 – 4.35	.10	.756
Relatedness	.75 (.64)	2.11	.60 – 7.39	1.37	.241
Emotional Reactivity	.12 (.51)	1.13	.42 – 3.03	.06	.812
Trait EI	-.25 (.48)	.78	.31 – 1.98	.27	.601

Note: ExpB = Odds ratio; HS = High School, GPA = grade point average, CI = Confidence Interval; significant predictors are bolded

proportion may eventually withdraw—this may then result in numbers that align with national statistics. Our significant findings, while few, are in line with Statistics Canada data that indicate higher high school grades are associated with lower chances of withdrawing from both university and college education (Shaienks et al., 2008). As well, it has been reported in Canada that male students are slightly more likely to withdraw from post-secondary education (Shaienks et al., 2008). While we did not observe this specific trend in the present study, being male was significantly associated with not completing on time.

The findings from the initial study by Wilson and colleagues (2019) implicated extraversion, conscientiousness, resiliency, and perfectionism as predictors of short-term academic success (i.e., first-year university GPA); however, none of these personality variables were significant predictors in the present study, demonstrating the differential role that personality may play over longer-term academic success. There are several possible explanations for the lack of significant findings observed in the present study. Largely, there was likely insufficient variance in the "withdrawn" group to capture meaning-

Table 4

Multinomial Logistic Regression Model of Predictors Associated with Student Retention (Delayed Group)

Predictors	B (SE)	ExpB	95% CI	Wald χ^2	P
		Full model			
Intercept	9.19 (3.80)			5.85	.016
Gender (Male)	.74 (.36)	2.09	1.04 – 4.20	4.28	.039
HS GPA	-.14 (.04)	.87	.80 – .93	14.07	.000
Personality					
Extraversion	-.34 (.19)	.71	.49 – 1.03	3.19	.074
Agreeableness	.25 (.24)	1.29	.81 – 2.04	1.14	.285
Conscientiousness	-.13 (.20)	.88	.60 – 1.30	.41	.522
Neuroticism	.10 (.28)	1.11	.64 – 1.92	.13	.715
Openness	.22 (.20)	1.25	.83 – 1.86	1.15	.284
Perfectionism					
Rigid Perfectionism	.21 (.29)	1.23	.69 – 2.19	.50	.479
Self-Critical Perfectionism	-.28 (.35)	.75	.38 – 1.49	.66	.415
Narcissistic Perfectionism	-.03 (.30)	.97	.53 – 1.76	.01	.919
Resiliency					
Mastery	.14 (.44)	1.15	.49 – 2.70	.10	.754
Relatedness	-.48 (.43)	.62	.27 – 1.42	1.28	.258
Emotional Reactivity	.65 (.36)	1.91	.94 – 3.91	3.17	.075
Trait EI	.54 (.39)	1.71	.80 – 3.67	1.92	.166

Note: ExpB = Odds ratio; HS = High School, GPA = grade point average, CI = Confidence Interval; significant predictors are bolded

ful differences in personality. Only 31 participants were considered "withdrawn" in our sample, making it improbable there was sufficient power to observe significant effects. For instance, one previous study that examined the relationship between trait EI and post-secondary retention after first year had a much larger sample size of individuals who withdrew (i.e., N = 213), which likely resulted in the authors being able to detect significant effects (Parker et al., 2006). Similarly, a recent study that found conscientiousness was a significant predictor of three-year retention had a sample of 459 students, with 189 categorized as "withdrawn" (Bipp et al., 2020). Thus, moving forward it would be worthwhile to replicate this study using a larger sample to increase the likelihood of detecting significant effects.

It is conceivable that personality and similar individual differences play the most critical role during the first year (or early years) of post-secondary education. First year is a crucial time where students experience significant transition across many different domains, including workload, social contacts, residential environment, and autonomy. This is evidenced by the increased number of students

who withdraw after first year compared to subsequent years (Finnie & Qiu, 2008; Grayson & Grayson, 2003; Parkin & Baldwin, 2009). Thus, the role of personality in retention may primarily be relevant for predicting retention into second year, and less relevant in predicting retention through to graduation. For students who persist beyond first year, their grades and other personal and academic factors may play a much more vital role in persisting to graduation. This aligns with the theoretical underpinnings of the WMSP (Burrus et al., 2013) employed in the present study, which specifically highlights the importance of second- and third-year GPA as a predictor of persistence into subsequent years of post-secondary education.

Regarding the exploratory variables (i.e., perfectionism, resiliency, and remaining Big Five factors), it is possible that the lack of significant associations is indicative of non-linear relationships between personality and success. There is evidence to suggest that the relationship between general performance and personality may be curvilinear in nature, depending on the traits assessed and the situation (e.g., Converse & Oswald, 2014). Specifically, in an academic context, previous reports suggest that while conscientiousness may have both linear and curvilinear (inverted U-shaped) associations with GPA, openness is only curvilinearly related (U-shaped) to academic performance (Cucina & Vasilopoulos, 2005). Thus, future work should examine potential non-linear relationships between personality and post-secondary retention.

Another potential explanation is that these more distal personality traits may not directly impact academic success factors, but instead may indirectly contribute through their relationships with more proximal factors. For instance, one study examining trait EI in undergraduates found that EI was not directly associated with GPA, but it did impact students' adjustment to university, which in turn was significantly associated with university GPA (Garg et al., 2016). Similarly, recent research found that conscientiousness predicts academic self-efficacy (Wilcox & Nordstokke, 2019) which is a moderate predictor of post-secondary persistence (Robbins et al., 2004). Additionally, neither perfectionistic strivings nor concerns were directly related to academic achievement (i.e., college GPA) in a recent study, but they were indirectly related through students' accurate or inaccurate self-assessments respectively (Park et al., 2020). Lastly, Hartley (2013) found that resilience moderates the rela-

tionship between mental health and course completion, such that resilience is predictive of greater course credit completion only for students experiencing psychological distress. Thus, the impact of personality on academic success broadly appears quite complex, and future studies should consider these potential mediating and moderating pathways in the context of long-term post-secondary persistence.

Finally, it is important to consider external environmental circumstances that may have played a role in the findings of the present study. The global COVID-19 pandemic significantly impacted the latter half of this cohort's fourth year of study. The abrupt switch to online learning, considerable increase in mental health concerns (Hamza et al., 2021), and potential decrease in access to support services alongside disruptions to coursework, placements, and evaluations (Sahu, 2020) may have contributed to the sizeable percentage of participants who did not complete their degrees on schedule. This is supported by a Statistics Canada (2020) survey that suggests 26–35% of post-secondary respondents experienced delays or cancellations in courses or planned work placements as a result of the pandemic. Thus, in the present study, the proportion of individuals who were delayed may have been disproportionately impacted by the pandemic compared to previous student cohorts; the findings should be considered in light of these unique circumstances. In addition to pandemic-related circumstances, another external factor that needs to be considered is the increased focus on improving student well-being and support in recent years at Canadian universities (DiPlacito-DeRango, 2016, 2021; Giamos et al., 2017). While there is still work to be done, post-secondary institutions are becoming increasingly focused on addressing the diverse needs of students with the goal of maximizing their success, a commitment that may serve as a protective factor for persistence and may be contributing to the low incidence of withdrawn students in the present study.

Limitations and Future Directions

Limitations of this study need to be considered. While the total sample size of the present study was respectable, as mentioned previously, the lack of power and variance in the group of withdrawn students may have contributed to the lack of significant effects. Additionally, we did not

maintain direct contact with participants throughout the entire length of the study and thus were unable to capture other non-academic circumstances or other external factors (e.g., family obligation, health/relational problems, time spent on exchange, etc.) that may have contributed to a student's decision to withdraw versus persist, or that may have resulted in a delay (Burrus et al., 2013). Future studies should consider following up with students to qualitatively assess their decision for withdrawing to help shed light on the complex nature of student retention. Parkin and Baldwin (2009) have highlighted the rise of indirect and non-traditional paths to post-secondary completion. We cannot confirm from the present study whether students who withdrew did so indefinitely or whether they elected to take an indirect route to post-secondary education attainment by continuing their studies at another institution or returning at a later date.

Lastly, the aim of this study was focused on personality as predictors of long-term retention given the dearth of literature examining these specific relationships. However, there are other individual difference factors including motivational factors and learning strategies (e.g., Richardson et al., 2012) that are relevant to student success and should be explored in relation to personality and persistence in future studies. Additionally, while this study was focused specifically on personality and individual differences, it is important to note that there are systemic and environmental factors (e.g., prejudice) that may be impacting these individual differences that were not reflected in the current study (for an example, see Hernández & Villodas, 2019). Similarly, while trait-like characteristics such as mastery and emotional reactivity are indeed important features of resiliency, there are other external factors (e.g., social support, financial support) that also contribute to a person's overall resilience. Future studies should consider examining the relationships between, and the relative contributions of, these combined factors on persistence.

Despite the limitations, one prominent strength of the present study is the length of time for which student data were collected. Academic information for this cohort of post-secondary students was collected for the entire length of a typical degree program, which is a methodological characteristic largely absent from the personality and academic retention literature. Moving forward, the relationship between personality and post-secondary persistence should continue to be explored longitudi-

nally, using larger samples and in conjunction with other important predictors to further our understanding of the complex path to post-secondary education completion.

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