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Prudence and Persistence: Personality in Student Retention

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Prudence and Persistence: Personality in Student Retention

By

Logan John Michels

A Thesis Submitted in Partial Fulfillment of the

Requirements for the Degree of

Master of Arts

in

Industrial-Organizational Psychology

Minnesota State University, Mankato

Mankato, Minnesota

May 2016

March 21, 2016

Prudence and Persistence: Personality in Student Retention.

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TITLE: PRUDENCE AND PERSISTENCE: PERSONALITY IN STUDENT RETENTION

Michels, Logan J., Minnesota State University, Mankato

Student retention is a concern for many higher education institutions and there are many techniques that can be used to increase student retention. Previous research has used student personality data to customize interventions aimed at increasing student success and retention. In this study, prudence levels of incoming students was assessed, and a customized email intervention was designed and administered to students with students having low prudence levels. A variety of outcome measures were used to assess the usefulness of the intervention, including GPA, academic and behavioral citations, and use of campus resources. Results indicate that prudence levels are positively related to GPA and course completion rates. Similarly, the customized email intervention was positively related to GPA, course completion rates, and negatively related to university-issued behavioral citations. The results indicate that prudence levels and customized interventions may be effective for increasing student retention. The meaning and applications of these findings are discussed, and suggestions for future research are outlined.

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CHAPTER I

Introduction

Student Retention

College student retention has been and still is an issue for many public higher

education institutions. While there are a variety of theories and models that have been

developed to explain college student attrition (e.g. Bean, 1980; Rootman, 1972; Tinto,

1993; Waterman & Waterman, 1972), the fact remains student retention is still an issue

within public universities at a national level. This is typically assessed by calculating

retention rates, which according to the National Center for Education Statistics (NCES),

are expressed as a percentage of first-time bachelors (or equivalent) degree-seeking

undergraduates from the previous fall who are again enrolled in the current fall (NCES,

2015a). Student retention and attrition is a complex issue because it involves much more

than just academic stressors (Mattson, 2007). Tinto (1975) proposes that student

retention is a longitudinal process and is influenced by different factors such as personal

adjustment, academic difficulty, incongruence between the student and institution, and

social isolation. Additionally, individual differences such as motivation levels and

shifting personal values can also add complexity to the student retention issue.

As Tinto (1993) explains, it can be very difficult to track student movement over

time as they move between institutions (transfer-out student), stop pursuing their

education and return later (stop-out), or graduate (NCES, 2015a). Relatively few

comprehensive, large-scale studies have been conducted to examine this issue. Notable

exceptions include the National Longitudinal Surveys, Beginning Postsecondary Students Longitudinal Study, and High School and Beyond and studies conducted via the NCES (NCES, 2015b). As such, the NCES is one of the best sources of information regarding educational trends.

The NCES generates yearly reports of current educational trends based on 42 key indicators (Kena et al., 2015). Indicator 41 is the "Institutional Retention and Graduation Rates for Undergraduate Students" (p. 234), which measures graduation rates. This indicator contains three important criteria: first-time students (undergraduates with no prior postsecondary experience), full-time students (those enrolled for 12 or more semester credits), and graduation rate (calculated by determining the proportion of students who complete their program within 150 percent of the normal time – i.e. six years for a typical undergraduate degree) (NCES, 2015a). In a general sense, this indicator could be viewed as an approximation of the graduation rates for the "traditional student," which is likely the largest proportion of the student population at most public universities. According to this indicator in the 2015 NCES report, an average of 58 percent of the first-time, full-time students from the 2007 cohort at public four-year institutions graduated within six years (Kena et al., 2015).

Additionally, Kena et al., (2015) reported that from fall 2012 to fall 2013, 80 percent of first-time, full-time undergraduate students returned to the same institution for their second year of college. This means that, on average, institutions lose 20 percent of their traditional student population before the second year. Combining this with the previously discussed indicator, an additional 22 percent of that same cohort (on average)

leaves over the next five years, resulting in a 58 percent graduation rate. These findings highlight the fact that student retention is still an issue in higher education.

Framed this way, it appears that the first year is a critical time for retaining new students. However, student retention into the following fall appeared to be a function of institutional selectivity, with the most selective institutions retaining approximately 95 percent of their students, and institutions with open admissions retaining approximately 60 percent of their students. Similar trends relating to institutional selectivity were reported with graduation rates as well (Kena et al., 2015).

In addition to these recent statistics, Tinto (1993) has noted that rates of college student attrition appear to remain relatively stable over time. After reviewing a number of studies aimed at examining student retention, Tinto (1993) concluded that over a 16-year period during the late 1970's to early 1990's, rates of degree completion have remained relatively stable. He did note, however, that the time required for students to complete their degrees has increased.

Retention rates at Minnesota State University, Mankato. Both Kena et al. (2015) and Tinto (1993) highlight trends at the national level, and they correspond to the pattern of student retention rates observed at Minnesota State University, Mankato (MNSU). MNSU is a mid-sized public university and has a Carnegie Classification of "Full-time, four-year, selective, higher transfer-in" indicating that 80 percent of undergraduates are enrolled full-time. Additionally, the institution is selective based on standardized test scores, with the test scores placing the University in the middle two-fifths of baccalaureate institutions, and more than 20 percent of entering undergraduates are transfer students (The Carnegie Classification of Institutions of Higher Education,

2015). Using the most recent data, the Office of Institutional Research, Planning and

Assessment (IRPA) at MNSU reports that the six-year graduation rate for the fall 2002 to

fall 2008 cohorts was been between 51.9 (in fall 2004) and 54.3 percent (in fall 2006 and

2008), see Figure 1. These rates were slightly below the national averages reported by

Kena et al., (2015); (IRPA, 2015).
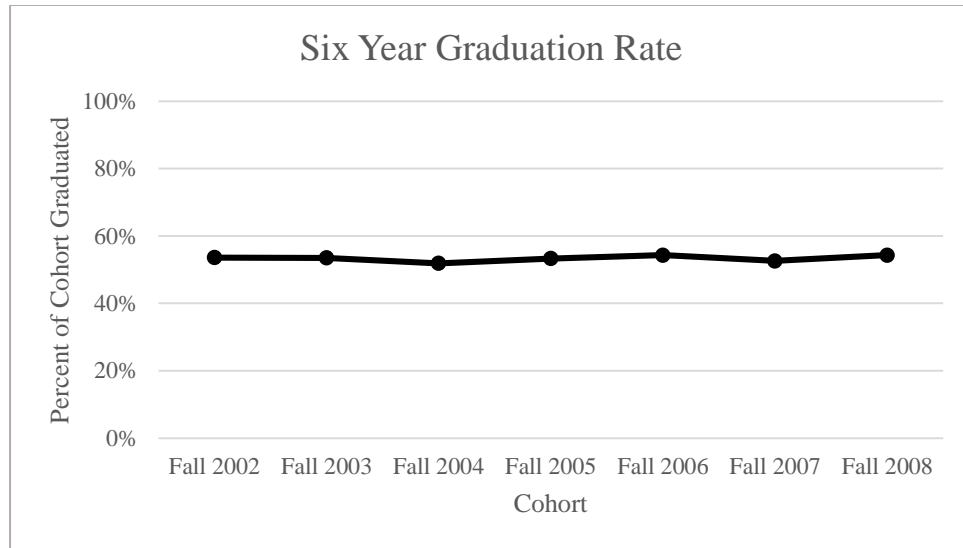
Figure 1. Six-year graduation rates for recent MNSU cohorts.

        When institutions have low student retention rates it causes unnecessary financial

burdens; however, meaningful financial gains can be realized when even a small

percentage of any cohort is retained after the freshman year until graduation. Noel Levitz,

an industry leader in student enrollment and student success consulting for higher

education, has created an interactive workbook to help institutions estimate the revenue

from retaining students based off net tuition revenue. According to their workbook and

current tuition rates, MNSU could save $1,409,827.50 if an additional 50 students from

an incoming cohort are retained for three additional years until graduation (L. Akey,

personal communication, October 9, 2015; Ruffalo Noel Levitz, 2015b). As this estimate

suggests, retaining even a relatively small number of students can generate meaningful

amounts of revenue that may become particularly important as external factors change. These factors could be things such as national or state economic shifts, new legislation being passed, or smaller applicant pools due to declining birthrates.

Best practices and interventions to improve retention. A variety of instructional and non-instructional practices exist to increase student retention. The instructional remedies often take the form of offering courses or programs designed for specific populations, such as first year, high risk, or underrepresented students (Braxton, Brier & Steele, 2008). In an attempt to identify the best practices of student retention and success, Noel Levitz conducts a bi-annual survey of educational institutions and reports popularity among non-instructional approaches. In the 2015 survey, some of the respondents included 55 four-year public accredited, degree-granting institutions (Ruffalo Noel Levitz, 2015a). The survey results showed that some of the best practices for retaining students in four-year public institutions included: honors programs for academically advanced students, academic support programs, opportunities for practical work experiences, mandatory first-year experience courses, mandatory one-on-one advising, and providing students with academic road maps (Ruffalo Noel Levitz, 2015a).

A general trend from this variety of best practices is that, as a whole, the tactics are geared towards tailoring the educational experience to the individual student groups as much as possible. Similar to how technology allows our online browsing and social media experiences to be adapted to our own behaviors (i.e. through the use of cookies, bookmarks, autofill for login credentials, storing credit card numbers), it appears that best practices of student retention involve customizing the educational experience to students' needs. For example, if a university can identify a problem area based on individual or

group differences, and then develop a program to accommodate those differences, the institution may be able to reduce the amount of student attrition that would have resulted without the program.

The idea of tailoring the educational experience to the student generally aligns with the different dimensions of institutional actions that higher education and retention theorists outline as a way to improve student retention (Tinto, 1993). These institutional actions are things the university can change or create in response to student and institutional needs, such as recruitment tactics, pre-entry assessments and placement, transition assistance programs, community building, monitoring and early warning systems, and student counseling and advising. Educational institutions have a variety of resources and programs they can leverage in an attempt to tailor the educational experience to students to increase student success rates.

Traditional and Non-traditional Predictors of Student Success

Many of the traditional and frequently used variables used in predicting college student success include cognitive measures such as high school GPA, high school rank, and standardized test scores. These are useful for college admissions offices when screening large numbers of applications (Kim, 2015); however, there is consistent evidence of subgroup differences on measures of cognitive ability (Gatewood, Field & Barrick, 2016; Ployhart, Schneider & Schmitt, 2006). Non-cognitive and demographic measures found within the literature are often used as both control and predictor variables, and are as diverse as personality (Martin, Montgomery & Saphian, 2006), gender (Kim, 2015), leadership experiences (Mattson, 2007), and on-campus versus off-campus housing (Hoffman & Lowitzki, 2005). Although the traditional measures are

most readily available, using the previously listed non-cognitive variables as predictors of

retention or college GPA can often explain additional variance in student success over

and above the traditional measures.

Robbins, Lauver, Le, Davis, Langley and Carlstrom (2004) conducted a meta-

analysis to examine the relationships between psychosocial and study skill factors (PSFs)

to measures of college GPA and college persistence. Their research included

psychological constructs as diverse as achievement motivation, social involvement,

general self-concept, financial support, and institutional selectivity. They found that

academic-related skills, academic self-efficacy, and academic goals have strong positive

relationships with retention, with mean operational validities of $\rho = .30$, $\rho = .26$, and $\rho =$

.21 respectively. Additionally, they found the estimated PSF relationships to retention

were generally stronger than the relationships between traditional predictors and

retention, with operational validities of $\rho = .24$ (high school GPA), $\rho = .21$ (SES), and $\rho =$

.12 (ACT/SAT scores). Different results were found with college GPA as the criterion. In

this case, academic self-efficacy was the best PSF predictor of GPA with a mean

operational validity of $\rho = .38$, and achievement motivation being the next best predictor,

$\rho = .26$. However, with college GPA as the criterion, the traditional predictors had the

highest operational validities ranging from $\rho = .17$ (SES) to $\rho = .45$ (high school GPA).

The study by Robbins et al. (2004) suggests that non-traditional predictors of college

success may predict academic retention better, but the traditional predictors may predict

college GPA better.

One possible reason that traditional measures predict GPA better is that high

school GPA and ACT/SAT scores are measures of ability – what one has learned up to

the point of the test (Gatewood, Field & Barrick, 2016). These are akin to "can do"

measures, which are often used to explain what people have the *ability* to do. However,

the non-cognitive measures such as motivation, personality, learning styles, and academic

self-efficacy, tap more of the "will do" aspect of the college experience – what students

will do, regardless of their level of ability. Ployhart, Schneider and Schmitt (2006) and

Chamorro-Premuzic & Furnham (2003) made similar observations in saying that there is

an important distinction between *ability to* and *willingness to* do something.

Non-traditional interventions for student success. In addition to developing

special programs designed to assist groups of students in being successful, there may be

potential in creating interventions targeted at the individual level (Ruffalo Noel Levitz,

2015a). Nooijer, Brouwer, Oenema, Brug, Crutzen, and Vries (2011) conducted a review

of internet-based interventions and noted that such interventions are particularly suited

for adolescents and young adults since they are more familiar with technology. They

identified a variety of online intervention strategies that were used within the public

health field to change behaviors.

The interventions were organized into four categories: customizing information

(at group or individual level), offering additional resources for support (via peers,

professionals, or discussion groups), content delivery (unlimited access or conditional

access), and linking the intervention to the social context (connecting the information to

assignments through invitations or reminders). Nooijer et al. (2011) observed that

combining the methods often yielded the most effective results. Similarly, Bendtsen and

Bendtsen (2014) conducted a study to see if the delivery mode affected the effectiveness

of an alcohol-related intervention. They found that more students receiving email

messages followed through with the program until completion compared to students receiving text messages. However, the text message group had more desirable behavioral changes compared to the email group.

With these general categories and delivery modes in mind, it appears that creating meaningful behavioral change could be accomplished with something as simple as sending emails to individuals. In fact, Nooijer et al. (2011) and Bendtsen and Bendtsen (2014) are but a few studies from the public health domain that are leveraging online platforms to perform interventions.

Other research has shown that informal word-of-mouth strategies for changing behaviors can be effective. De Vries, Crutzen, Oenema, Nooijer, Brug & Brouwer (2009) investigated whether email invitations sent from individuals rather than institutions were more useful for convincing people to participate in an online intervention. They found that emails from individuals were more helpful than emails from institutions, although participation rates from both groups was low. Together, the results from de Vries et al. (2009), Nooijer et al. (2011), and Bendtsen and Bendtsen (2014) show that email prompts, specifically those that come from individuals, can lead to behavioral changes in recipients.

Researchers in the educational realm have used similar techniques, combined with personality measures, to improve student success (as measured by GPA) at a university (Martin, Montgomery & Saphian, 2006; Haemmerlie & Montgomery, 2012; Montgomery, Goff, Foster & Lemming, 2009). Specifically, researchers worked with the administration at a Midwestern university to set up an academic success program called *Success Chain*. This program involved a personality assessment of incoming students, a

series of email communications to inform students of helpful resources, among other

features. Their intervention was successful, and researchers found positive relationships

between conscientiousness and academic performance. Specifically, they found that

conscientiousness had a strong relationship with academic performance during the first

year, but it declined steadily thereafter. After accounting for gender differences, they

tested the relationship between the traditional predictors (high school rank and ACT test

scores) and the non-traditional predictors (personality dimensions). They concluded that

personality accounts for a small portion of variance in GPA after accounting for

traditional measures. Our research and intervention will be similar to that used by Martin,

Montgomery, and Saphian (2006).

      Potential intervention platforms. MNSU has at least three intervention

platforms related to this concept of an online intervention designed to change behaviors,

two of which relate to academics. One of these systems is the Star Alert system, which

focuses on public safety and uses both online and text messages to alert university

students and staff members of potentially dangerous situations around campus. This

system is a great example of how technology can be used to send alerts or warning

messages to targeted groups. A similar architecture or platform could be developed to

warn instructors or administration officials of individual students who may be at risk

academically.

      The second and more relevant program is MavCARES, which is an early alert

referral service for academic concerns. Instructors, staff, students, and parents can use

this resource to communicate concerns they have regarding a student's academic

performance or behavior. While MavCARES is important, it is also voluntary and may be

more of a reactive approach to solving the academic retention issue. Developing a

platform that accounts for individual differences and then sends communications based

on those differences may be more effective at creating change.

A third program that customizes academic notifications to individuals is the

Maverick Curricular Learning Assistant for Student Success (MavCLASS). This program

was developed by MNSU, piloted, and modified between fall 2013 and spring 2015, and

can be downloaded as an app on student mobile devices (L. Akey, personal

communication, February 1, 2016). It can communicate general notifications from

instructors to students, and messages regarding specific assignments based on individual

progress and performance. Results from the pilot study indicate that it was successful in

engaging students and changing their behaviors. This or a similar platform could serve as

the vehicle through which our intervention could be implemented.

Leveraging Personality

Five factor model of personality. In contemporary personality psychology, there

is a general consensus that personalities consist of five or more broad dimensions

(factors) (Brocklebank, Pauls, Rockmore & Bates, 2015); this is commonly known as the

Five Factor Model (FFM) or the Big 5 (Ployhart, Schneider & Schmitt, 2006). According

to Ployhart, Schneider and Schmitt (2006), the five personality dimensions are

extraversion, neuroticism, agreeableness, conscientiousness, and openness to experience.

McCrae & Costa (1997) researched the cross-cultural validity of the FFM and found

these five factors are present in a wide variety of cultures and languages. These

personality factors describe different traits, shown in Table 1. Each personality factor

represents a continuum of traits. For example, individuals high in extraversion are

energetic and outgoing, but individuals low in extraversion are described as introverted

and have opposing traits.

Table 1

Five Factor Model of Personality with Descriptions

Personality Factor	End of Continuum	Description
Extraversion	+	Active, energetic, enthusiastic, outgoing
Neuroticism	-	Anxious, tense, unstable, worrying
Agreeableness	+	Appreciative, generous, kind, trusting
Conscientiousness	+	Efficient, organized, reliable, thorough
Openness to Experience	+	Artistic, curious, insightful, wide interests

Note. Adapted from McCrae & John (1992). "+" are adjectives defining the positive end

of a personality factor continuum. "-" are adjectives defining the negative end of a

personality factor continuum.

Some have developed refinements to the FFM, thus changing the number of

factors and slightly changing the definitions of each of the factors. Notable cases include

the six-factor HEXACO model of personality (Ashton & Lee, 2007) which adds an

honesty/humility factor in addition to the FFM. The seven-factor Hogan Personality

Inventory (HPI) (Hogan & Shelton, 1998; Hogan & Hogan, 1992; Hogan & Hogan,

2007) breaks extraversion into ambition and sociability, and openness into inquisitive and

learning approach (Hogan & Holland, 2003; Hogan & Hogan, 2007). These changes are

largely due to empirical and theoretical differences among researchers. The remainder of

this review will focus on research by Hogan and colleagues and their work in developing

and applying the Hogan Personality Inventory.

Hogan personality inventory. The HPI was developed in the late 1970's by

Robert and Joyce Hogan, and is a measure of normal personality (Hogan & Hogan, 1992;

Hogan & Hogan, 2007). It was influenced by Robert Hogan's Socioanalytic theory

(Hogan, 1996), which is largely consistent with evolutionary theory. It explains

personality as an adaptive human feature that is used to balance the often conflicting

demands of getting along with others while at the same time getting ahead of others in

life. A large part of this involves managing ones' reputation, which is essentially ones

personality from the observer's perspective. Personality and reputation both contribute to

getting along and getting ahead.

The HPI contains seven primary scales, as well as a validity scale to detect

careless responding. It is designed to predict occupational performance. See Table 2 for

definitions of these primary scales; the descriptions can be used to describe the degree to

which a person exhibits those traits. The HPI factors largely align with the FFM; see

Figure 2 for an approximation of the relationships between the two personality structures.

The remainder of this review will focus on the personality construct of prudence

(essentially conscientiousness in FFM terms). Although prudence and conscientiousness

are slightly different constructs, they will be used interchangeably because the differences

are negligible within this context.
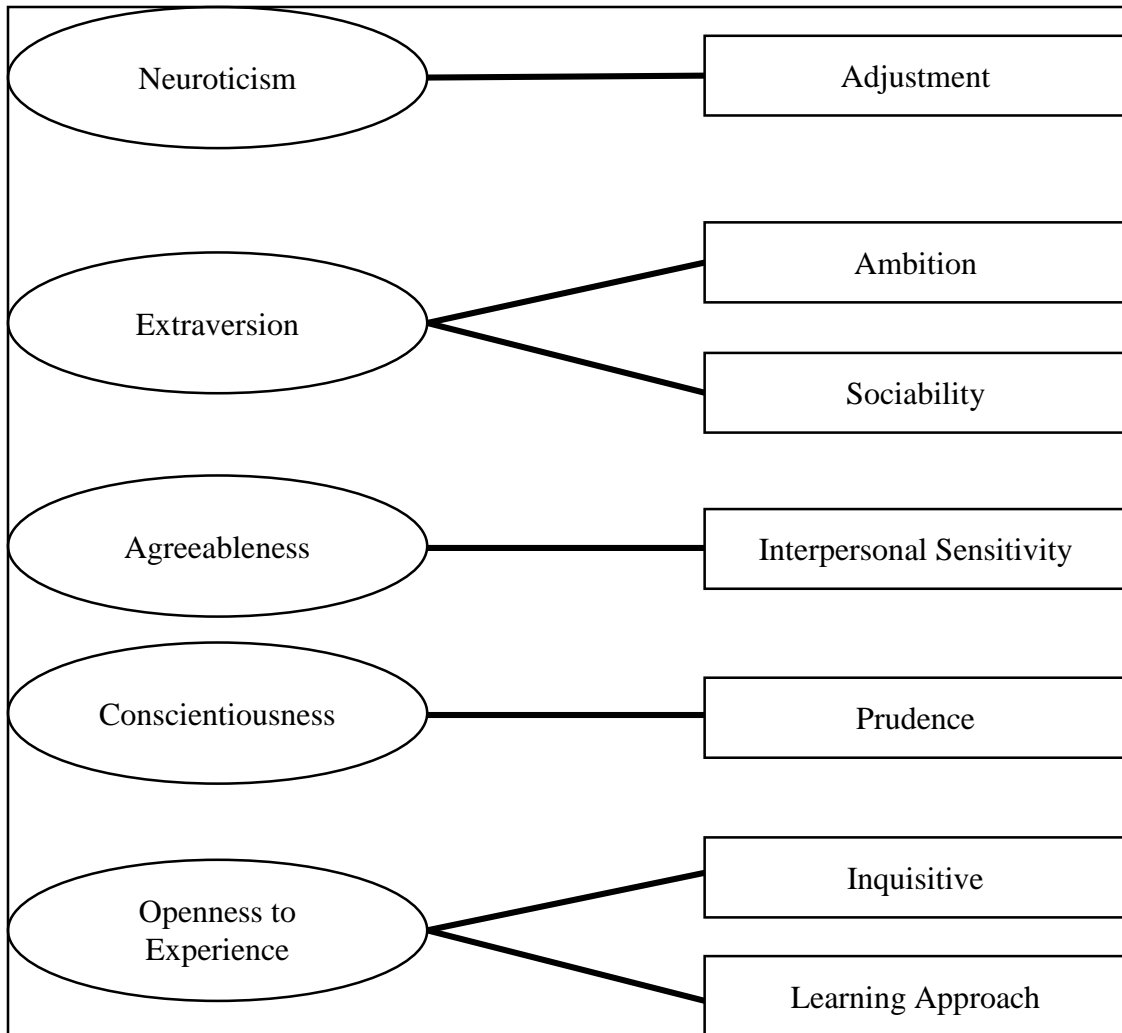
Figure 2. Relationship between FFM and HPI Factors. Adapted from Hogan & Holland,

(2003) and Hogan & Hogan (2007).

Table 2

HPI Factors and Definitions

HPI Factor	Description
Adjustment	Appears calm and self-accepting
Ambition	Is self-confident, leader-like, and energetic
Sociability	Needs or enjoys interacting with others
Interpersonal Sensitivity	Is seen as perceptive, tactful, and socially sensitive
Prudence	Seems conscientious, conforming, and dependable
Inquisitive	Is perceived as bright, creative, and intellectual
Learning Approach	Enjoys academics and values educational achievement

Note: Adapted from Hogan & Hogan (1992) and Hogan & Hogan (2007).

The Nature of Prudence

   Prudence at work. In a meta-analytic review structured around the Socioanalytic

theory, Hogan and Holland (2003) found that prudence is a valid predictor of both getting

along and getting ahead criteria in employment settings. Getting along was

operationalized as, "behaviors that gain approval of others, enhance cooperation, [and]

serve to build and maintain relationships" (p.103), and getting ahead was operationalized

as, "behavior that produces results and advances an individual within the group and the

group within its competition" (p. 103). Given these criteria, prudence predicted getting

along criteria with an estimated true validity of $\rho = .31$, and getting ahead criteria with a

true validity of $\rho = .20$. Prudence, along with ambition and adjustment, are generally

valid for predicting getting along and getting ahead criteria. These results indicate that

prudence is relevant and predictive of important real world outcomes such as getting

ahead; for example, pursuing a college degree.

Similarly, Barrick and Mount (1991) conducted a meta-analysis investigating the

relationship between Big 5 factors and three different aspects of job-related performance:

job proficiency, training proficiency, and personnel data. Barrick and Mount (1991)

found that when averaging all criteria, conscientiousness was the best predictor of

performance, with a mean validity of $\rho = .22$. In relation to training proficiency (such as

proficiency in college classes), conscientiousness had a validity of $\rho = .23$, which was out

predicted only by extraversion ($\rho = .26$) and openness to experience ($\rho = .25$). These

results indicate that if college courses are comparable to job training, prudence may be a

useful indicator of successful academic performance.

Prudence in academic pursuits. In a meta-analysis by Poropat (2009), the

authors investigated the relationships between the FFM and academic performance as

measured by GPA. The author found that there is reason to believe that personality

relates to academic performance since FFM often predicts socially valued behaviors, and

personality differences influence that willingness to perform. That meta-analysis included

more than 55 thousand participants, and results showed that of the five personality

factors, conscientiousness had the strongest relationship with GPA, having a sample-

weighted correlation of $\rho = .22$. The next strongest relationships were openness ($\rho = .12$)

and agreeableness ($\rho = .07$). Intelligence, as measured by standardized tests, had the

strongest relationship with GPA ($\rho = .25$). Additionally, conscientiousness was the only

trait that wasn't moderated by academic level, with correlations remaining consistent

across all educational levels studied. Poropat (2009) concluded that theorists and

educators should seriously consider the role of personality in academics, noting that

"personality is definitely associated with academic performance" p. 334. Additionally,

Poropat (2009) mentioned that FFM measures could be used to identify students who are

likely to underperform, and that personality could be used as a way to target individuals

who would benefit from academic assistance programs.

However, overall academic performance is different from persistence and

retention. A study conducted by Gibson, Lounsbury, and Saudargas (2004) investigated

the role of the FFM in student intentions to withdraw from college. They found that

emotional stability and conscientiousness had a strong negative relationship with

intentions to withdraw, meaning those who are more conscientious are less likely to

withdraw. Together, emotional stability and conscientiousness explained 16 percent of

the variance in intentions to withdraw from college. To summarize their findings, the

authors recommended assessing students as they enter college. The authors suggested that

assessing student personalities is practical because it is a way to identify those who may

be at risk and get them support, enhance person-environment fit (room assignments, etc.),

inform course selection, and suggest it may be useful if applied to an admissions process.

Chamorro-Premuzic and Furnham (2003) conducted a study to investigate

academic performance metrics with the Big Five. The authors found that

conscientiousness was the only personality factor that had strong positive relations to

final exam scores across multiple years (and final project), with correlations of $r = .33$ to

$r = .39$. Neuroticism had similar correlations in the negative direction. The Big Five were

also tested against measures of absenteeism, behaviors, and essay scores. There was a $r =$

$-.24$ correlation between conscientiousness and absenteeism, indicating that those with

more conscientiousness may perform better academically because they engage in positive

behaviors such as showing up for class.

Present Study

There is evidence that shows subtle differences in regards to academics between

students who are retained versus those who are not retained (Munt & Merydith, 2012).

Additionally, personality is not a frequently used non-academic predictor of student

success (Mattson, 2007). There is also converging evidence that indicates

communications sent to students (especially from individuals) can lead to behavioral

changes in students (e.g. Bendtsen & Bendtsen, 2014; Nooijer et al., 2011). Based on this

knowledge, the following relationships are hypothesized:

H1: Prudence is positively related to desirable academic outcomes[1].

H1a: Prudence is positively related to GPA

H1b: Prudence is positively related to retention into the following term

H1c: Prudence is positively related to course completion rates

H2: Prudence is negatively related to undesirable academic and student life outcomes.

H2a: Prudence is negatively related to occurrences of academic misconduct

(academic integrity and scholastic dishonesty measures, MavCARES reports)

H2b: Prudence is negatively related to occurrences of student misconduct (Office

of Student Conduct measures such as drinking)

H3: Individuals who receive intervention emails will have more desirable academic

outcomes than those who do not receive them.

H3a: Students in experimental group will earn higher GPAs than control group

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[1] Assuming that higher GPA and longer retention are considered desirable. Currently at MNSU, a transfer-out is considered a success.

H3b: Students in experimental group will have higher retention rates into

following term than control group

H3c: Students in experimental group will have higher course completion rates

than control group

H4: Individuals who receive intervention emails will have fewer undesirable academic

and student life outcomes

H4a: Students in experimental group will have fewer occurrences of academic

misconduct (same measures as H2a) compared to those in control group

H4b: Students in experimental group will have fewer occurrences of student

misconduct (same measures as H2b) compared to those in control group

H5: Participants in the experimental group will use suggested services more than control

group.

H6: There will be a curvilinear relationship between use of academic services and

prudence level.

CHAPTER II

Method

Participants

Participants were selected from a larger study which included 177 incoming first-year and transfer students at MNSU – students taking their first MNSU course(s). The HPI prudence score was then used to select fifty-nine of these participants into a group receiving the experimental manipulation or serve as matched controls. Of the total sample, 141 were female (79.7%) and 36 were male (20.3%), which was not representative of the incoming fall 2015 cohort (53.5% female, 46.2% male). The average age was 19 years ($SD = 3.79$), which was comparable to the average age of the incoming cohort. The sample had the following ethnic proportions: White (86.4%), Asian (4.0%), Two or more races (2.8%), Nonresident Alien (2.3%), Black or African American (1.7%), Hispanic of any race (1.7%), Unknown race and ethnicity (1.1%), which was quite representative of the incoming cohort.

Procedure

Incoming freshman and transfer students at MNSU were recruited to participate in our study and take the HPI through an online Qualtrics survey, which is a survey software to which MNSU subscribes. Participants were sent a recruitment email (Appendix A), and if they agreed to participate they were directed to the consent form (Appendix B). After giving consent, students were directed to an additional page where they accessed

the HPI (Appendix C), and those who did not participate were sent a reminder (Appendix D).

In addition to online recruiting, the researchers identified introductory courses that contained high proportions of freshmen and transfer students. Researchers gained approval from instructors to recruit participants and went into the classroom, explained the study (Appendix E), obtained consent (Appendix F), and subsequently emailed the participants a link to the personality inventory if they were eligible (Appendix G) or notified them if they were not eligible (Appendix H). Recruitment stopped during the week of September 28, 2015, and HPI data was collected from Hogan Assessments on October 5, 2015.

After the HPI data was collected, the researchers identified students with low prudence scores. A matched-samples design was used to match individuals with similar scores on the prudence scale. Participants were randomly assigned to either a control or experimental group based on these scores. The matched-samples design and random assignment allowed researchers to create similar groups based on prudence level. Thus, researchers could test the intervention effects on individuals with similar prudence levels.

Intervention

The intervention was a series of targeted emails sent to students in the experimental group during the fall 2015 term. Email content was tailored to the suspected academic needs of these students; specifically, students with low prudence may demonstrate poor study skills, skip class, or have poor time management skills. The content of the messages contained information about resources on campus such as tutoring, reminders to register for classes, and instructional tutorials on how to manage

time and set academic goals (Appendix I). The first intervention email was sent on

October 25, 2015, the second was sent on November 8, 2015, and the third was sent on

November 21, 2015.

Measures

Data was gathered in two stages. In the first stage, the researchers gathered HPI

data from Hogan Assessments during the fall 2015 term prior to creating experimental

groups and delivering the intervention. In the second stage, we gathered institutional and

student life data on participants shortly after the spring 2016 term began.

Prudence. Prudence was assessed using the HPI (Hogan & Hogan, 1992; Hogan

& Hogan, 2007). As previously described, the HPI is a measure of normal personality, it

contains one validity scale and measures seven personality factors, one of which is

prudence. The validity scale detects erratic or careless responding, and a score below 10

on this scale indicates all of the results in the report are uninterpretable. Overall, the

prudence scale measures one's conscientiousness, conformity, and dependability. This

construct has two parts: conscientiousness and traditional values, and the second part is

caution, control, and conformity (Hogan & Hogan, 1992; Hogan & Hogan, 2007). This

scale has 31 items and an internal consistency reliability of $\alpha = .71$. The prudence scale

is positively related to academic performance, but not thought to be related to cognitive

ability (Hogan & Hogan, 2007).

Prudence contains seven facets, displayed in Table 3, along with sample items.

Table 3

Prudence Facets and Example Items

Prudence Facet	Example Item
Moralistic	I always practice what I preach.
Mastery	I do my job as well as I possibly can.
Virtuous	I strive for perfection in everything I do.
Not Autonomous	Other people's opinions of me are important.
Not Spontaneous	I always know what I will do tomorrow.
Impulse Control	I rarely do things on impulse.
Avoids Trouble	When I was in school, I rarely gave the teachers any trouble.

Note. Adapted from Hogan & Hogan (2007).

Academic variables.

Grade Point Average. Fall 2015 GPA was gathered from IRPA for all participants to assess whether the intervention was related to differences in GPA. Similarly, we were able to assess whether prudence levels were related to differences in GPA.

Retention into spring 2016. Retention into spring 2016 was assessed by gathering course registration data after the 10th day of the term. The data was gathered after the 10th day since it is used as an official reporting date and if students drop a class, they often drop before the 10th day of a term.

Fall 2015 course completion rate. Fall 2015 course completion rates were assessed by gathering data regarding the number of credits attempted and the number of credits completed. This is expressed as a ratio of attempted/completed.

   Measures of academic and student life outcomes. Measures of academic and
student misconduct were assessed by gathering cheating and academic misconduct data,
MavCARES reports, or other meaningful data that is tracked through the Office of
Student Affairs.

   Academic services utilized. Use of academic services was assessed by gathering
variables such as library study rooms reserved, times visited the Academic Success
Center, or other resources that could be counted by Mavcard use.

CHAPTER III

Results

Data Preparation

Personality results were gathered from Hogan Assessments, institutional and student life data were gathered Institutional Research, Student Affairs, and from different offices at MNSU. A total of four cases were removed from the 177 cases due to unacceptable validity scores on the HPI. The four removed cases were from the low prudence experimental or control groups. Three additional cases were removed as some participants took the personality assessment multiple times. The final sample included 170 participants, with 19 exact HPI matched pairs (38 participants) in the prudence-specific sample. Table 4 shows the mean and standard deviations of the HPI scores for the experimental groups and the entire sample.

Table 4

HPI Descriptive Statistics

Group	*M*	*SD*	*N*
Entire Sample	33.85	25.58	170
Experimental	15.84	17.43	19
Control	15.84	17.43	19

Analyses were focused in two areas – testing the effects of the experimental manipulation using a variety of outcomes, and testing the relationship between prudence

and some of those same outcomes. Unless otherwise noted, analyses involving prudence

included 170 participants, and analyses involving tests between experimental groups

involved the 19 matched pairs.

Analyses

        Hypothesis 1. To test Hypothesis 1a, that prudence is positively associated with

GPA, a linear regression was performed using all 170 participants from the study. Fall

2015 GPA ($M = 3.22$, $SD = .80$) was regressed onto prudence scores, and the simple

regression (one-tailed) indicated a significant positive relationship between the variables,

($\beta = .23$, $p = .001$), and prudence accounted for 5.5% of the variance in GPA.

        To test Hypothesis 1b, that prudence is positively associated with retention into

the following term, a logistic regression was performed using all 170 participants from

the study. Retention into spring 2016 was regressed onto prudence scores, and the model

did not significantly predict retention compared to no model at all, $\chi^2(1) = .25$, $p = .61$.

Nagelkerke $r^2 = .004$, indicating that prudence accounts for no variability in retention.

This hypothesis was not supported. It is important to note that due to the relatively small

sample size and the relatively high fall 2015 to spring 2016 retention rate (92.4%), it

would be difficult for a logistic model to add significant predictive value.

        To test Hypothesis 1c, that prudence is positively associated with course

completion rates, a linear regression was performed using all 170 participants from the

study. When fall 2015 course completion rates ($M = .94$, $SD = .14$) were regressed onto

prudence scores, the simple regression (one-tailed) indicated a significant positive

relationship ($\beta = .19$, $p = .006$), and prudence accounted for 3.7% of the variance in

course completion rates.

Hypothesis 2. To test Hypothesis 2a, that prudence is negatively associated with academic misconduct, a linear regression was performed using all 170 participants from the study. When frequency of MAVCares reports ($M = .01$, $SD = .15$) was regressed onto prudence scores, the simple regression (one-tailed) model was not significant, ($\beta = -.06$, p $= .22$). This hypothesis was not supported. These non-significant results may represent floor effects and could be the result of MAVCares reports being a low base-rate event, since only one student receiving two alerts through this system. Hypothesis 2b stated that prudence is negatively related to behavioral citations; this hypothesis could not be tested because student conduct data is only be reported at the group level.

Hypothesis 3. To test Hypothesis 3a, that students in the experimental group have higher GPAs than controls, a paired samples t-test was used to compare the mean differences in GPA between experimental and control groups. The results indicate the intervention did have a significant effect on increasing GPA, $t(18) = -2.91$, $p = .005$ (one-tailed). Mean GPA of the experimental group ($M = 3.34$, $SD = .72$) was significantly higher than prudence-matched samples in the control group ($M = 2.65$, $SD = 1.05$). The effect size was $d = .77$, indicating a medium-large effect. In practical terms, this mean difference in GPA is approximately the difference between a B+ and a B-. This hypothesis was supported.

To test Hypothesis 3b, that students in the experimental group have higher retention rates into the spring term than controls, a Fisher's exact test was performed. The results indicate that there was no significant relationship between experimental condition and retention rates, $p = .84$. Additionally, $\phi = .10$, $p = .66$ represents a small effect. This hypothesis was not supported.

To test Hypothesis 3c, that participants in the experimental group have higher course completion rates than controls, a paired samples t-test was performed. The test indicated there was a significant difference between course completion rates, $t(18) = -2.64$, $p = .009$ (one-tailed). The experimental group ($M = .95$, $SD = .11$) had significantly higher course completion rates than the control group ($M = .83$, $p = .23$). This indicates a medium effect size, $d = .67$. This hypothesis was supported.

Hypothesis 4. To test Hypothesis 4, that students in the experimental group have fewer occurrences of academic misconduct than controls, paired samples t-test was conducted. The t-test indicated there was not a significant difference between groups on MAVCares frequency, $t(18) = 1.00$, $p = .17$ (one-tailed). The participants in the experimental group ($M = 0$, $SD = 0$) did not have significantly fewer MAVCares reports than individuals in the control group ($M = .11$, $SD = .46$). This indicates a small effect, $d = .34$. This hypothesis was not supported. Again, these results could be related to floor effects, and the low base rate of MAVCares reports.

To test Hypothesis 4b, that students in the experimental group have fewer occurrences of student misconduct, a repeated measures t-test was conducted. The t-test indicated a significant difference between groups, $t(19) = 2.137$, $p = .024$ (one-tailed). Individuals in the experimental group had fewer occurrences of behavioral incidents ($M = .00$, $SD = .00$) than individuals in the control group ($M = .53$, $SD = 1.07$). The effect size indicated this was a moderate effect, $d = .70$. This hypothesis was supported, although it is important to note that this measure could also be considered a low base rate event as only two students had behavioral records.

Hypothesis 5. To test Hypothesis 5, that participants in the experimental group use suggested services more than controls, a repeated measures t-test was conducted using two separate dependent measures, frequency of visits to the CAS and total time spent using CAS services. Regarding the CAS frequency, the repeated measures t-test indicated that there was no significant difference between groups, $t(18) = -1.16$, $p = .13$ (one-tailed). The individuals in the experimental group did not visit the CAS significantly more often ($M = .58$, $SD = 1.71$) than individuals in the control group ($M = .11$, $SD = .32$). The effect size was, $d = .38$, indicating a small effect. This hypothesis was not supported. When considering length of time spent in the CAS, the t-test indicated there was no significant difference between groups, $t(18) = -1.46$, $p = .08$ (one-tailed). Individuals in the experimental group did not spend significantly more time in the CAS ($M = .94$, $SD = 2.49$) than individuals in the control group ($M = .09$, $SD = 0.29$). This effect size was $d = .48$, which indicated a small-moderate effect. The hypothesis was not supported by using this measure although it trended in the predicted direction.

Hypothesis 6. To test Hypothesis 6, that the relationship between prudence level and use of academic services is curvilinear (as measured by time spent in CAS), a hierarchical regression was conducted. This calculation was justified since a scatter plot indicated the possibility of a nonlinear relationship. Mahalanobis and Cook's distances did not definitively indicate that any cases were multivariate outliers, so 142 subjects were used in the analysis (the prudence experimental group was excluded since the intervention prompted them to visit the CAS). Prudence was entered in the first step to control for the linear effects of prudence. Prudence^2 was entered in the second step of the regression to assess the non-linear effects of prudence on time spent in the CAS. The first

step of the model was not significant, $F(1, 140) = .45$, $p = .50$. The second step was also

not significant, $F(2, 139) = .42$, $p = .66$. See Table 5 for summary statistics. This

hypothesis was not supported using this measure.

Table 5

Hierarchical Regression of Prudence on Time Spent at CAS

Variable	Step 1	Step 2
Prudence	-.06	-.23
$(Prudence)^2$		.19
ΔR^2	.003	.003
Sig.	.50	.54

Note: Sig. = significance of ΔR^2 test

        To test whether the relationship between prudence level and use of academic

services was curvilinear (as measured by times visited the CAS), a hierarchical regression

was conducted. This calculation was justified since a scatter plot indicated the possibility

of a weak nonlinear relationship. Mahalanobis and Cook's distances did not definitively

indicate any cases were multivariate outliers, so 142 participants (except the prudence

experimental group) were used in the analysis. Prudence was entered in the first step to

control for the linear effects of prudence. Prudence^2 was entered in the second step of the

regression to assess the non-linear effects of prudence on the number of times visited the

CAS. The first step of the model was not significant, $F(1, 140) = .08$, $p = .78$. The second

step was also not significant, $F(2, 139) = .11$, $p = .90$. See Table 6 for summary statistics.

This hypothesis was not supported using this measure.

Table 6

Hierarchical Regression of Prudence on Times Visited the CAS

Variable	Step 1	Step 2
Prudence	-.02	.08
(Prudence)^2		-.11
ΔR^2	.001	.001
Sig.	.78	.72

Note: Sig. = significance of ΔR^2 test

CHAPTER IV

Discussion

Restatement of the Purpose for this Study

The purpose of this study was to examine the effects of a personality-based email intervention on a variety of academic outcomes, with the primary outcome of interest being student retention. In addition, researchers assessed the relationships between prudence and these same outcomes in separate analyses. Significant results were found for five of the 12 total hypotheses.

Findings

Hypothesis 1 stated that prudence would be positively associated with GPA (1a), retention rates (1b), and course completion rates (1c). Hypothesis 1a was supported, and there was a moderate effect size in the relationship between the two variables such that higher prudence is associated with higher GPA. Hypothesis 1b was not supported; no association was found between prudence and retention rates. Hypothesis 1c was supported. Specifically, higher levels of prudence are associated with higher course completion rates. Hypothesis 2 stated that prudence would be negatively associated with academic misconduct (2a) and student misconduct (2b). Hypothesis 2a was not supported, possibly due to MAVCares being a low base-rate event. Hypothesis 2b was not testable, as the data existed at the group rather than individual level.

Hypothesis 3 stated that individuals who receive the intervention would have higher GPA (3a), retention rates (3b), and course completion rates (3c) than matched

controls who did not receive the intervention. Two of these hypotheses were supported, indicating there is a positive relationship between the intervention emails, GPA and course completion ratios, with mid-large effect sizes. Hypothesis 4 stated that individuals who received the intervention would have fewer academic misconduct (4a) and student misconduct (4b) citations than matched controls who did not receive the intervention. Hypothesis 4a was not supported, indicating no significant relationship between intervention and academic misconduct. Hypothesis 4b was supported, such that individuals who received the intervention had fewer behavioral citations.

Hypothesis 5 stated that individuals receiving the intervention would use CAS services more than matched controls who did not receive the intervention. This hypothesis was not supported by using measures of frequency or duration. Hypothesis 6 stated that there would be a curvilinear relationship between use of CAS services and prudence level. This hypothesis was not supported by using measures of frequency or duration.

Limitations of this Study

This study had several key limitations. First, perhaps the most consequential weakness was the unexpectedly small sample size. The sample was a small fraction of the total incoming cohort, even after the research team invested many hours into classroom recruiting. Having a larger sample would have increased the statistical power of the tests and could have changed some the results. Several students also had invalid HPI scores, which contributed to the sample size weakness. Second, the sample had a high proportion of women to the extent that it was not a representative sample of the incoming cohort.

Third, due to time constraints, we may have measured student retention too soon, as students are more likely to churn between academic years rather than during them.

Fourth, in terms of measures, some of the undesirable outcomes that were used as criterion may be unreliable, contaminated, and low base-rate events that make us less confident in any conclusions which could be drawn from these results. Although these factors are expected to some extent in most, if not all social science research, there was evidence from the MAVCares measure that financial concerns may be a contaminant, as seen in the instructor comments below.

Comment 1: "Had difficulty with finances for books. Student appears eager to learn but some classroom comments indicate that she may be underprepared for the level of work which will come soon in class."

Comment 2: "[Student name], due to some struggles in using a website and not managing time well, has missed an important assignment. [Student name] needs to attend regularly, get help on papers, and do some extra credit to succeed in the class."

Fifth, some of the hypotheses could not be tested as library room reservations and behavioral citation data could not be reported at an individual level. Sixth, the sample did not appear to have a typical distribution of prudence scores – the research sample contained slightly more people with low prudence scores such that it did not appear normal based on norms outlined in the HPI manual (Hogan & Hogan, 2007). Seventh, we do not know if students even read the intervention emails; students could have deleted them without reading the interventions.

Strengths of this Study

Although this study has weaknesses, there are also strengths that pertain to both the research and its design, but also strengths that are not related to design. Perhaps most importantly, the study is a matched samples experimental design, and marks the beginning of a longitudinal study. In terms of the criterion measures, this study had a variety of outcomes that came from different offices within the institution. Capturing such a broad range of outcome variables can give better insights into what secondary factors are being influenced by the intervention (rather than just retention). Relatedly, the retention data was gathered at important times. Students can withdraw from courses up until the 10th day without penalty, and our data was collected after this date, which could have made this measure more accurate than gathering it immediately after the fall term.

Implications

There are a number of implications from the results of this study. Prudence has a consistent relationship with desirable academic outcomes (i.e. GPA, course completion ratio), and these results are consistent with those from a large-scale meta-analysis (Poropat, 2009). Thus, if personality would ever be used as selection criteria for incoming students or for entry into specific programs, prudence should be used as one of the predictors. If this were the case, prudence level could help solve a much larger issue that may be the reason for undesirable retention rates in the first place – admitting too many students who may not be prepared for college.

Additionally, the intervention was positively related to GPA and course completion rates, and effect sizes indicated mid-large effects. In practical terms, this could mean the difference between a student having a B or C average. This, in turn, could

have an impact on student success in terms of finding jobs or applying for graduate

programs. The intervention was also associated with having fewer undesirable academic

outcomes. Using customized interventions could be useful for reducing behavioral

citations among students. Theoretically, this could mean that interventions may be

effective at reducing negative behaviors and promoting positive outcomes. This could

also have an impact on measures such as MNSUs College Portrait or Integrated

Postsecondary Education Data System (IPEDS) reporting depending on which variables

are reported. College Portrait is a voluntary system of accountability that MNSU

participates in, and it is used by parents and students to objectively compare institutions

across a variety of criteria. IPEDS is used to provide institutions a relative comparison on

a variety of characteristics in their respective student populations.

In a general sense, it is also important to consider the converging evidence in this

research. Prudence and the customized intervention are significantly associated with

higher GPA and course completion rates. The intervention is associated with fewer

behavioral citations. Aside from student success, these pilot results suggest that with

more statistical power, assessing personality and incorporating customized interventions

could potentially facilitate something as broad as a culture shift in the student population.

Findings from this research could be used to design a student engagement

communication/intervention platform. If consistent evidence in future research is found

indicating the intervention is effective, a university employee or office could be tasked

with administering student engagement emails tailored to personality traits. This entity

could serve as a central hub for monitoring a variety of student-related metrics. Such an

action would help to unify, coordinate, and align different programs which may be aimed

at increasing student retention, engagement (as measured by the National Student Survey of Engagement), or other relevant measures. Much of the data gathering and communications could be automated. Developing such a platform could provide a multi-disciplinary project for the IT department, Computer Science and Psychology majors, and other groups to work on together. Such a platform could push the University towards achieving at least three shared principles outlined in the Academic Master Plan: "Student Engagement and Success," "Liberal Arts & Applied Learning," as well as "Research, Scholarly and Creative Activity."

Perhaps at a more general level, the University should develop a mechanism for incorporating applied research such as this into its very existence as a way to harness its own energy. Consider this research as an example. If the results from this pilot program prove fruitful, the University should consider requiring incoming students to partake in such research projects (e.g., take part in their choice of 2 of 5 research studies). This mechanism could be inserted into the admissions process before students register for classes. This mechanism could have several key benefits. First, it could provide unique predictor data that could be used to support, evidence-based interventions to improve institutional-relevant metrics such as student GPA, retention, and engagement. Second, it would stimulate scholarly research at MNSU and simultaneously allow the University and the researchers to benefit from it. Third, it could facilitate the use of longitudinal research designs which are often difficult to conduct, yet often necessary to solve complicated problems such as student retention issues. Fourth, it could serve as a faculty performance criterion and motivator. Having one's research agenda selected as one of the few, prestigious institutional projects would help identify faculty who are motivated,

competent, and deserving of promotion and tenure. Lastly, it would be a great way for MNSU to stand out among its peers while staying true to its motto: "Big ideas. Real-world thinking."

Recommendations for Future Research

My recommendations fall into several categories: intervention receptiveness, statistical power, additional variables, additional assessments, and how to embed the intervention.

First, future researchers should consider using an email delivery service (MailChimp) or a specific email function (Read Receipt in Outlook) that can track whether intervention emails were actually opened. Controlling for whether or not participants were actually exposed to the intervention content via opening an email could provide more confidence in the effectiveness of the intervention. One caveat to this would be that people may be able to view email content or attachments through a viewing pane without actually opening the email. Although this may not be a perfect indicator, it would give more insight into how participants interact with the intervention emails.

Another recommendation is to improve the recruitment process to increase the participant sample size. This could be improved by making any classroom recruiting scripts exceedingly clear and simple. As the participants are incoming first year or transfer students, they are most likely unfamiliar with research in general, let alone how or why they should participate in it. Although researchers attempted to make this clear while recruiting, there was one instance when an instructor followed up with researchers about questions that students had after the recruitment. Another supplement would be to post this study on SONA with an early deadline. These techniques could lead to a

increased statistical power due to a larger sample, but could also be achieved by

researching fewer personality factors, since researchers divided the sample to look at

individual personality characteristics separately.

       In terms of dependent variables, one might consider using different behavioral

criterion in addition to the variables included in this study. This could include behaviors

which are tracked via D2L or MavCLASS. These behaviors may provide additional

insights into the relationship between personality characteristics, customized

interventions, and student behaviors or metrics that may be prerequisites, mediators, or

moderators of student retention and success. Variables of primary interest would include

anything tracked through MavCLASS (e.g. completing D2L assignments on time, length

of time spent in D2L discussion boards, etc.). Similarly, one might consider gathering

additional predictor data from Institutional Research such as high school GPA,

standardized test scores, and expected family contribution (EFC) from the FAFSA.

Controlling for these measures may provide more insight into future results and reduce

criterion contamination if they are controlled.

       Additionally, there may be other personality assessments that may be more

affordable for the University after these studies are complete. One example is the Work

Behavior Inventory, which is a product of Assessment Associates International (AAI), a

Minnesota-based company (Assessment Associates International, 2016). This could serve

as another personality inventory and it has been used in previous research at this

institution (Pavot, 2005). Having a choice between multiple assessments could lead to

large savings and/or convenience in the long run if student personality is assessed as part

of any student selection process or personality-based intervention program because different vendors may have different rates for their assessments.

Another recommendation is to embed this intervention into a specific office or program for delivery, such as the First Year Experience program or within the Office of New Student and Family Programs. If interventions can come from someone such as a program director, instructor, graduate assistant, or advisor from one of these departments, it could personalize the intervention more, and perhaps lead to better results. This would ensure that a larger portion of the incoming students would take the assessment, as they could be more motivated, engaged, or responsive to the intervention emails since FYEX courses are voluntary. It may be worthwhile for future researchers to coordinate with these departments to see if this is a viable option.

In conclusion, the research, results, and implications presented in this thesis are important in that they provide insight into how a complicated issue such as student retention can be systematically researched and solved. Increasing student retention and success by assessing student personality traits and customizing interventions to the individual level is feasible, practical, scalable, and timely. This research provides evidence of the relationships between personality characteristics and student performance. Similarly, there appear to be relationships between an email intervention and student performance. If the results of this and future research show consistent results, and if the practical implications are leveraged and aligned properly, MNSU could significantly increase student success in addition to its own competitive advantage in the future.

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Appendix A: Recruitment Email

Hello [NAME], and welcome to Minnesota State University, Mankato!

We are interested in starting a program to help students feel more involved here at

MNSU. One way we'd like to do this is to tailor students' experiences here at MNSU to

fit their personality. This year, we are trying out a new program, and are looking for some

new students to help us test it. If you participate, you will be entered into a drawing for a

$25 gift certificate to Amazon.com after you complete the first survey.

If you would like to learn more about this opportunity, please click on the link below. If

you have questions about this program, please contact Dr. Kristie Campana at

Kristie.campana@mnsu.edu. Thank you for your time!

[LINK GOES HERE]

Dr. Kristie Campana

Dr. Lynn Akey

Dr. David Jones

Appendix B: Consent Form

You are requested to participate in research supervised by Dr. Kristie Campana on

student personality and how emails increase engagement. The goal of this survey is to

determine whether receiving tailored emails helps students feel more engaged when

beginning college. If you have any questions about the research, please contact Dr.

Campana at Kristie.campana@mnsu.edu.

If you participate in this study, you will agree to the following:

- You will fill out a short personality assessment, which will take about 15 minutes. If

  you are interested in receiving your results, you can provide your email address on

  the assessment. You may contact Dr. Campana if you have questions about your

  results.

- You may be asked to fill out a brief survey at the end of fall semester asking about

  some of the ways you have participated on campus. This survey will take fewer than

  5 minutes.

- You may receive 4-8 emails throughout the year informing you of events or services

  you may find helpful.

- You may receive an invitation to fill out the same personality assessment again. As

  before, you can choose to receive your results if you wish.

- You give us permission to link your survey results to institutional research data, such

  as GPA, completion rates, and similar university information.

Participation is voluntary. You have the option not to respond to any of the questions.

You may stop taking any survey at any time by closing your web browser. Participation

or nonparticipation will not impact your relationship with Minnesota State University,

Mankato. If you have questions about the treatment of human participants and Minnesota State University, Mankato, contact the IRB Administrator, Dr. Barry Ries, at 507-389-2321 or barry.ries@mnsu.edu.

Responses will be kept confidential. However, whenever one works with online technology there is always the risk of compromising privacy, confidentiality, and/or anonymity. If you would like more information about the specific privacy and anonymity risks posed by online surveys, please contact the Minnesota State University, Mankato Information and Technology Services Help Desk (507-389-6654) and ask to speak to the Information Security Manager.

The risks of participating are no more than are experienced in daily life.

There are no direct benefits for participating. Individuals who fill out the first Hogan survey will be entered into a drawing for a $25 gift certificate to Amazon.com.

Depending on Hogan Survey results, individuals selected to continue in the program will be entered into an additional drawing for a $25 gift certificate to Amazon.com after completion of two additional surveys at the end of the school year. Society might benefit from identifying ways to keep students engaged in college.

☐By checking this box, you are indicating you are over the age of 18 and you consent to participate in this study.

Please upload an image of your signature here

Please print a copy of this page for your future reference.

MSU IRBNet ID#   764218

Date of MSU IRB approval: 9/2/2015

Appendix C: Link to Hogan Personality Inventory

Thank you for agreeing to participate in our study—we appreciate your input!

The first step is to complete your personality survey. This will take about 15 minutes, and

you will receive your results a few minutes after you finish the survey. If you have any

questions about your results, please contact Dr. Campana at Kristie.campana@mnsu.edu .

You will need to enter in a UserID and Password to take the assessment:

USER ID: [xxxx]

PASSWORD: [xxxx]

[SURVEY LINK GOES HERE]

Again, thank you for participating, and let us know if you have questions.

Appendix D: Recruitment Reminder

Hello again, [NAME],

We sent an email on [DATE] inviting you to complete a personality survey in order to be eligible for a drawing for a $25 gift certificate to Amazon.com. We wanted to remind you about the offer.

If you would like to learn more about this opportunity, please click on the link below. If you have questions about this research, please contact Dr. Kristie Campana at Kristie.campana@mnsu.edu. Thank you for your time!

[LINK GOES HERE]

Dr. Kristie Campana

Dr. Lynn Akey

Dr. David Jones

Appendix E: Classroom Recruitment Script

Hello,

We are inviting new students, both first-year students and transfer students, to take part in a research project. If you are interested in participating in this project, you would take a short personality test at the beginning of this semester, and at the end of the semester. Some participants would also receive an additional email in the middle of the semester asking about some of your behaviors this semester. Some participants will also receive 4-6 emails about events and services on campus. Participants will be entered into a drawing for a $25 Amazon.com gift certificate.

I am handing out some consent forms that give you more information about our research. If you are interested in participating, please sign one copy and provide your MNSU email address, and keep the second copy for your records. If you are not interested, you can hand back a copy without signing it. Please let me know if you have any questions. I will pick up both the signed and the unsigned copies in a few minutes. Thank you for your time.

Appendix F: Classroom Consent Form

You are requested to participate in research supervised by Dr. Kristie Campana on student personality and how emails increase engagement. The goal of this survey is to determine whether receiving tailored emails helps students feel more engaged when beginning college. If you have any questions about the research, please contact Dr. Campana at Kristie.campana@mnsu.edu.

If you participate in this study, you will agree to the following:

- You will fill out a short personality assessment, which will take about 15 minutes. If you are interested in receiving your results, you can provide your email address on the assessment. You may contact Dr. Campana if you have questions about your results.

- You may be asked to fill out a brief survey at the end of fall semester asking about some of the ways you have participated on campus. This survey will take fewer than 5 minutes.

- You may receive 4-8 emails throughout the year informing you of events or services you may find helpful.

- You may receive an invitation to fill out the same personality assessment again. As before, you can choose to receive your results if you wish.

- You give us permission to link your survey results to institutional research data, such as GPA, completion rates, and similar university information.

Participation is voluntary. You have the option not to respond to any of the questions. You may stop taking any survey at any time by closing your web browser. Participation or nonparticipation will not impact your relationship with Minnesota State University,

Mankato. If you have questions about the treatment of human participants and Minnesota State University, Mankato, contact the IRB Administrator, Dr. Barry Ries, at 507-389-2321 or barry.ries@mnsu.edu.

Responses will be kept confidential. However, whenever one works with online technology there is always the risk of compromising privacy, confidentiality, and/or anonymity. If you would like more information about the specific privacy and anonymity risks posed by online surveys, please contact the Minnesota State University, Mankato Information and Technology Services Help Desk (507-389-6654) and ask to speak to the Information Security Manager.

The risks of participating are no more than are experienced in daily life.

There are no direct benefits for participating. Individuals who fill out the first Hogan survey will be entered into a drawing for a $25 gift certificate to Amazon.com. Depending on Hogan Survey results, individuals selected to continue in the program will be entered into an additional drawing for a $25 gift certificate to Amazon.com after completion of two additional surveys at the end of the school year. Society might benefit from identifying ways to keep students engaged in college.

Please sign below if you are over the age of 18 and consent to this study:

_____

(Signature)

_____

(Printed name)

(MNSU email address, so we can contact you with instructions for the personality assessment)

Please keep an unsigned copy of this page for your future reference.

MSU IRBNet ID#   764218

Date of MSU IRB approval: 9/2/2015

Appendix G: Email Template for Eligible Participant

Hello,

Thank you for taking an interest in our study about student engagement!

As we noted on the consent form, the first part of this process will request that you

complete a personality assessment. I've provided a PDF with instructions with this email.

These instructions will also have your unique user ID and password that you can use to

logon to the assessment website.

If you have problems opening the file, you may need to download Adobe Acrobat

Reader, which you can do here: https://get.adobe.com/reader/

Please let me know if you have any trouble completing the survey, or if you have any

additional questions about the study. Thanks again for being willing to participate!

Sincerely,

[Researcher Name]

Appendix H: Email Template for Ineligible Participant

Hello,

Recently, you signed up for a study that is investigating new students (both first-year students and transfer students). According to our records, you are not in either of these categories.

If we have made a mistake, please let us know! However, our study is focusing on students who are new to MNSU, so it is important that we include only students who meet this criteria.

Thank you for your interest in our study!

Sincerely,

[Researcher Name]

Appendix I: Intervention Emails

Intervention Email 1 – Sent October 25, 2015

Hello,

The fall semester is going by quickly, with only seven weeks left in the term! With our busy schedules combined with the fast pace of the fall term, it is easy to forget about all of the resources available to us on campus. Below are some quick tips and reminders to help make your first semester at MNSU Mankato successful.

- The Center for Academic Success has a number of great resources, including academic tutoring, advising, placement testing, and study skills tips:

  o http://www.mnsu.edu/success/tutoring/

- Spring 2016 registration begins in early November – schedule a meeting with your academic advisor to make sure you get into the right classes:

  o http://www.mnsu.edu/academics/advising/

- As a student, know your rights and responsibilities. Check out the Student Handbook which contains important information for both student life and academics:

  o http://www.mnsu.edu/students/basicstuff/

Have a great week,

Logan Michels

Intervention Email 2 – Sent November 8, 2015

Hello,

Finals week will be here before you know it, with exams to study for and final projects coming due. I wanted to share some resources so you can manage your time effectively during these last several weeks. Below are some interesting resources to help make your first semester at MNSU Mankato successful.

- If you haven't already checked out Lynda.com, I highly recommend it. It is free to all MNSU students and I found a great instructional series on how to leverage your Outlook calendar to set up appointments, meetings, and your weekly schedule – I use it all the time. Similar functions exist in Gmail:

  - http://www.lynda.com/Outlook-tutorials/Outlook-Office-365-Essential-Training/377829-2.html

- Another Lynda.com series from Aaron Quigley and Matt Fishbach show you how to set and follow through with SMART learning goals. Try using these techniques in conjunction with your Outlook calendar:

  - http://www.lynda.com/Higher-Education-tutorials/Learning-Lynda-com/377830-2.html

- Do you know how you learn the best? Check out the VARK questionnaire and see which modality works best for you (visual, auditory, reading/writing, or kinesthetic). Once you know, get creative and tailor your study habits to your preferences:

  - http://vark-learn.com/the-vark-questionnaire/

Have a great week,

Logan Michels

Intervention Email 3 – Sent November 21, 2015

Hello,

Thanksgiving break begins next Thursday, which means there are only eight days of class before finals week. Below are some more tips and resources to help make your first semester at MNSU Mankato successful.

- Attend the workshop sponsored by the Counseling Center called, "**Overcoming Test Anxiety**" on Wednesday December 2, at 1PM in CSU 204:

  o http://www.mnsu.edu/counseling/workshops.html

- **Meet with your professors** and review your grades before finals week

  o Sometimes grades are entered incorrectly, assignments get lost, or you find out that you didn't do some of the required work. Refer to your syllabi and schedule a time to meet with them during their office hours.

- Take advantage of the **individual and group study rooms** in the Memorial Library.

  o Group study rooms are located on the upper floors of the library, are available for several hours at a time, and work great when you need to collaborate on projects.

  o Individual study rooms are located in the basement of the library, don't need to be reserved, and are a great neutral space to help you focus on your work.

  o Learn more here: http://lib.mnsu.edu/services/circ/grouprm.html

Have a great weekend,

Logan Michels