

5-2016

Facet-Level Personality Development: An Intervention for Developing Student Self-Discipline and Orderliness

Kenton R. Kloster

St. Cloud State University, kenton.kloster@gmail.com

Follow this and additional works at: http://repository.stcloudstate.edu/psyc_etds

Recommended Citation

Kloster, Kenton R., "Facet-Level Personality Development: An Intervention for Developing Student Self-Discipline and Orderliness" (2016). *Culminating Projects in Psychology*. Paper 3.

This Thesis is brought to you for free and open access by the Department of Psychology at theRepository at St. Cloud State. It has been accepted for inclusion in Culminating Projects in Psychology by an authorized administrator of theRepository at St. Cloud State. For more information, please contact kewing@stcloudstate.edu.

Facet-Level Personality Development: An Intervention for Developing Student Self-Discipline and Orderliness

by

Kenton Robert Kloster

A Thesis

Submitted to the Graduate Faculty of

St. Cloud State University

in Partial Fulfillment of the Requirements

for the Degree

Master of Science in

Industrial/Organizational Psychology

May, 2016

Thesis Committee:

Daren Protolipac, Chairperson

Jodi Illies

Edward Ward

Abstract

Three perspectives of personality disposition/trait, identity and reputation (Sacket & Walmsley, 2014) were identified as a framework for defining personality. The five-factor model (FFM) of personality has drawn a lot of research attention and recently it has shown mean-level increases in conscientiousness throughout young adulthood (Leikas & Salmela-Aro 2015; Roberts, Walton, & Viechtbauer, 2006). Cohen and Sherman's (2014) cycle of adaptive changes model was used as a theory that explains how personality develops within the FFM and potential moderators (proactivity, implicit theories of personality, and self-restraint) were investigated in an experimental study of young, college-aged students focusing on developing the sub-facets of self-discipline and orderliness. An implicit personality theory (IPT) measure was developed to explain these mean level changes in young adulthood. The IPT had acceptable internal consistency ($\alpha = .76$) and exhibited predictive validity of personality development. The results of the experiment were null and the limitations and future research recommendations are discussed.

Keywords: personality, change, implicit theories, development, self-discipline, orderliness, conscientiousness.

Author Note

I'd like to thank all the people who made this possible. First, my committee Dr. Daren Protolipac, Dr. Jody Illies, and Dr. Ward. In particular my chair, Dr. Protolipac, worked with me to expand my exposure to concepts in personality psychology and develop my approach and mindset as a researcher. Second, my classmates, Emma Mathison, Dan Holtus, Adam Smith, Nate Van, Kelly Jones, and Julian Nugaru. In particular Emma Mathison for improving my methodology and Dan Holtus for improving the intervention. Finally, my family, who supported and encouraged me throughout my entire graduate education.

Favorite Quotes form *Purpose Driven Life* by Rick Warren:

“Life is a test, a trust and a temporary assignment.”

“Nothing is quite as potent as a focused life.”

“Knowing your purpose gives your life.”

“Never confuse activity with productivity.”

Table of Contents

Section	Page
Introduction	7
Three Definitions of Personality	7
An Issue of Semantics–Personality Change	9
Mean Level Change as Personality Development	10
Implicit Theories	13
Proactivity as a Moderator of Personality Change	15
Self-Regulation as Exploratory Influence in Personality Change	16
Method	18
Study 1: Development IPT	18
Step 2: Increasing Conscientiousness	20
Results	23
Discussion	29
Future Research and Limitations	31
Conclusion and Recommendations	34
References	35
Appendices	
A. Tables and Figures	43
B. Implicit Personality Theories Questionnaire	45
C. Implicit Personality Theories	46
D. Informed Consent Form	47

	6
Chapter	Page
E. Proactive Personality Scale	49
F. Control Group Handout	50
G. Incremental Group Handout	51
H. Emails and Surveys	54
I. Brief Self Control Scale	60

Introduction

Do our personalities change over time? Can we actively change our personality? Can we predict who will change their personality and who won't? To answer these questions requires a precise definition of personality. Larsen and Buss (2014, p. 4) offer one definition: "personality is the set of psychological traits and mechanisms within the individual that are organized and relatively enduring and that influence his or her interactions with, and adaptations to, the intrapsychic, physical, and social environments." This is one of the latest definitions of personality, but it and no other definition is commonly accepted among scholars (Engler, 2013). This could be for any number of reasons, but certainly is attributable to the complexity and variety of idiosyncratic differences that define who we are (our personalities). With this complexity and multidimensionality come multiple definitions. In a recent review by Sackett and Walmsley (2014), three different views of personality were identified: identity, behavior/reputation and disposition/temperaments.

Three Definitions of Personality

Identity refers to how an individual views themselves (Hogan & Shelton, 1998). This perspective has related topics such as possible selves (Stevenson & Clegg, 2011). Possible selves are different future roles in which individuals can see themselves later in life. For example, a young adult may see himself as future podiatrist or orthopedic surgeon. This is part of the individual's identity and will influence the decisions he/she makes. This individual would likely behave differently when offered drugs (e.g., say, "no") compared to an individual who sees himself as a high school dropout. Both of these individuals are influenced in the moment of being offered drugs by their possible selves. The second view of personality,

behavior/reputation, is an external view of personality (Hogan & Shelton, 1998). The external view deals with how people perceive each other and how this forms reputation through behavior.

Dispositions/temperaments is the third view that states that the way we view personality should be founded upon biological or dispositional forces (McAdams & Pals, 2006; McCrae & Costa, 1995). These disposition/temperaments are also known as traits, which strongly influence our behavior. Differences in the dispositions/temperaments view of personality are highlighted well in canines. Dog breeders, for example, are able to produce animals that are capable of displaying different traits (Larsen & Buss, 2014). Think about some common breeds, could you name some common traits among beagles and pitbulls? Surely, and we can see unique characteristics in each breed that is not found in the others. With people, at least to some degree, there are trait, dispositional and temperamental influences in our personality that make us different on some genetic or biological level. Emotionality, sociability and impulsivity are some temperaments studied by personality psychologists (Buss & Plomin, 1984). As an example, one study found that children who displayed strong tempers had higher divorce rates later in life more than mild tempered children (Caspi, Elder, & Bem, 1988).

Notably, the dispositions/temperments view of personality asserts the stability of the five factor model (FFM) of personality across countries (Cobb-Clark & Schurer, 2012; McCrae & Costa, 1994; McCrae & Costa, 1995; McCrae et al., 2000). This view is also held by Hogan, Hogan, and Roberts (1996, p. 473), who stated that “what people do—their behavior—is a function of the kind of people they are—their personalities.” They believe that

personality analogous to the weather. A person's behavior is not perfectly predictable in any given situation, but general trends of behavior can be found and predicted over time because personality traits are stable. This view states that dispositions/temperaments are personality and that personality predicts general behavior. However, this view in isolation ignores the more malleable perspectives of identity and reputation as personality.

An Issue of Semantics–Personality Change

Professor Cattell, a contemporary of Thorndike (1913, p. 10), introduced the term “jingle fallacy” referring to when two people use the same word, but the word holds different meaning for each person. Semantics are one root to the debate of whether personality change is possible. Few would argue that dispositions, such as the traits bred in dogs, could be changed easily. Likewise, few would argue that people do not have the capability to learn new behaviors. When one school of personality claims that personality change is not possible and the other does, this is a modern example of the jingle fallacy. It is a goal of personality psychologists, arguably scientists in general, to create a common *lingua franca* (Block, 2000) because doing this will help advance the study of personality psychology.

The etymology of *personality* reveals that the word has a rich history. In some instances referring to one's personality as the Holy Trinity and in another instance the quality of being human or a famous/important person who is outgoing (Personality, n.d.a). It is possible that the word originated from the Latin *personae*, referring to the ancient Greek *persona* (Engler, 2013), meaning mask. Regardless of its roots, the word describes how people are idiosyncratically different (Personality, n.d.b). This does not lead one to conclude whether the word personality was intended to encompass any particular view (external,

identity or trait) of personality. However, as personality research has progressed, some psychologists have accosted the term for a singular view, leaving a muddy understanding to the question, “can personality be developed?”

To resolve this issue of semantics, and create a common *lingua franca*, personality psychologists must agree to use terms with their precise meanings and learn to specialize within the field of personality psychology, similar to the medical field (Larsen & Buss, 2014). Because the wealth of knowledge of medicine is so great, individuals specialize into certain domains (e.g., endocrinologists and pediatricians). Analogously, personality research has grown to be increasingly complex and requires specialization, but also exposure to the different areas of expertise. Larsen and Buss (2014) identify six larger domains of personality: dispositional, biological, intrapsychic, cognitive/experiential, social and cultural, and adjustment. Therefore, an accurate definition and understanding of personality should incorporate both changeable and unchangeable aspects of personality. Arguably, it is best to call the unchangeable aspects of personality (e.g., traits, temperaments, dispositions) by their respective definitions and the changeable aspects of personality (e.g., intrapsychic mechanisms, identity, and reputation) by their respective terms and let personality be an encompassing definition of the two. Therefore, an accurate answer to the question—“can personality be changed”—is “yes, but only certain aspects.”

Mean Level Change as Personality Development

There is evidence that personality as measured by the five factor model changes passively over time as we age (Leikas & Salmela-Aro 2015; Roberts et al., 2006). Roberts et al.’s (2006) meta-analysis summarizes findings of 92 cross-sectional and longitudinal findings

to resolve the conflicting evidences of mean level change. They conclude that mean level personality change occurs throughout life, but particularly in young adulthood in conscientiousness and openness to experience. This is evidenced even more recently with Leikas and Salmela-Aro's (2015) finding that major life events can have an effect on personality in university settings in which students had increased conscientiousness. Specifically, illness led to increased conscientiousness and increased neuroticism within the same sample and entering college was related to an increase in conscientiousness. Therefore, changes in personality factors may be explained by life events, not just underlying dispositions. Personality development is an emerging field that will continue to grow and develop (Mroczek & Little, 2014). For this paper, no semantic difference between "personality change" and "personality development" were made, and the terminology personality development is used henceforth. In the literature there are few studies (at least within the FFM) examining whether personality traits can be actively developed.

Jackson, Hill, Payne, Roberts, and Stine-Morrow (2012) found openness to experience could be developed through an intervention. Recruiting from an elderly population, participants ($M = 72.9$, $SD = 7.7$ years) were given a series of games and compared to a waitlist control group to see if openness to experience increased, specifically using Goldberg's (1999) IPIP-AB5C (ingenuity (e.g., Am full of ideas), intellect (e.g., Enjoy thinking about things), quickness (e.g., Catch on to things quickly), creativity (e.g., Ask questions that nobody else does), and competence (e.g., Seek explanations of things)). This increase in openness corresponded with an increase in inductive reasoning. Essentially, debunking the adage, "an old dog cannot learn new tricks." This finding is particularly

meaningful in contrast to the findings of Roberts et al. (2006), whose meta-analytic findings of 92 studies found that openness to experience decreased during the ages when Jackson et al.'s (2012), intervention was conducted, suggesting that interventions can reverse the negative impact of mean effects of growing older.

This gives credence to the perspective that behavior is something that can be changed based on context and reinforcement and should be investigated for the sake of improving workplaces (Sakett & Walmsley, 2014). Conscientiousness in particular is valuable because it has been shown to be related to performance in the workplace (Barrick & Mount, 1991; Barrick & Mount, 1993; Barrick, Mount, & Judge, 2001; Caligiuri, 2000). Furthermore, not all dimensions of personality may be equally genetically influenced. In a twin study, Jang, Livesley, and Vernon (1996) found that order, self-discipline and deliberation were sub-factors of the NEO-PR-I conscientiousness factor that were explained mostly by environmental factors, as opposed to genetic influences. For these reasons the focus of student personality development is on these dimensions.

It is hypothesized that this personality development becomes possible because of cycle of adaptive outcomes, a process by which behavior can cycle back as an input and lead to lasting change (see Appendix A, Figure 1; Cohen & Sherman, 2014). In their model, the self-system and social-system create adaptive outcomes that lead to changes in one another. For example, imagine a student trying to become more conscientious. The first step to become more conscientious may be buying a planner, which occurs in the self-system. This could lead to an individual using the planner and missing fewer classes and assignments, which are adaptive outcomes (a). The individual then begins to see ones' identity as more conscientious

and would find new benefits from being more conscientious (b). The adaptive outcomes (fewer classes and assignments being missed) may lead to a change in the social system (c), such as being invited to a study group with peers who are more conscientious. Members in the study group (which are part of the social-system) may assist in preventing fewer missed assignments and other adaptive outcomes (d). The social-system may also affect an individual directly through means such as affirmations or association (e). Finally the self-system may directly affect the social system (f), such as choosing to enroll in more interesting and academically challenging classes. Thus, Cohen and Sherman's, (2014) model was used to select implicit theories, proactive personality and self-restraint as potential moderators of personality development.

Implicit Theories

Implicit theories are beliefs that people hold about themselves (e.g., intelligence, morality, athletic ability, personality) and can be categorized between two different dichotomies: incremental theorists and identity theorists (Dweck & Leggett, 1988). Incremental theorists are individuals who believe that certain aspects of themselves are malleable and can be changed through effort while entity theorists believe that they are fixed and won't engage in development (Dweck & Leggett, 1988). For example, "I'm smart" or "I'm dumb" are implicit theories that students may hold about their intelligence. If students are told that they are smart then they begin to believe it and exert *less* effort because they don't believe that effort is necessary to learn (Mueller & Dweck, 1998). Thus, praise for "being smart" can undermine a child's motivation and performance. Research around implicit theories of intelligence have produced valuable interventions (Good, Aronson, & Inzlicht, 2003), such as bridging the academic achievement gap between gender and ethnicity on standardized math

scores in the seventh grade. This was achieved by mentoring the seventh graders with college students, who emphasized the expandable nature of intelligence.

As for implicit personality theories, Chiu, Hong, and Dweck, (1997) have developed a three-item measure used to assess lay dispositionism, the mechanism where people use their implicit theories to attribute stable traits on others. Their findings were that if people are incremental theorists then they are less likely to display lay dispositionism, attributing the behavior of a person to the situation. The implication then is that our judgements are affected by our implicit theories. However, this measure was not used to assess the degree to which people engage in personal development, therefore, a new measure was created in study 1. The implicit personality theory that this study investigates is the malleable versus stable nature of personality traits.

With the success seen in implicit theories of intelligence interventions it is expected that similar gains be found from interventions in personality, which is the aim of the thesis. Since incremental mindsets can be trained (Chiu et al., 1997; Good et al., 2003), it is expected that after an intervention, student implicit theories of personality will have increased from an intervention (treatment) and be more capable of creating adaptive outcomes in their personality than a control group.

H1: The incremental treatment will have increased incremental theories of personality compared to the control group.

If incremental mindsets apply to personality as they do intelligence, then individuals who hold incremental beliefs will be able to develop their personality. For example, the sub-facets of conscientiousness on the International Personality Item Pool (IPIP) include self-

efficacy, orderliness, dutifulness, achievement-striving, self-discipline and cautiousness. Some of these facets have been shown to increase in various contexts including increased self-efficacy (Ashford, Edmunds, & French, 2010), improved self-discipline of high school students (Duckworth, Grant, Loew, Oettingen, & Gollwitzer, 2011), and self-regulation (related to self-discipline) was shown to increase after the adoption of regular practice (Muraven, Baumeister, & Tice, 1999). This is some of the evidence reviewed by Baumeister, Gailliot, DeWall, and Oaten (2006) that lends evidence to the possibility that the conscientiousness ‘trait’ can be developed. Therefore, after an intervention we can expect;

H2(a): The incremental group will have greater positive changes on overall conscientiousness, (b) orderliness, and (c) self-discipline than the control group.

A recent critique of psychology has been that too much emphasis has been placed on self-report (Baumeister, Vohs, & Funder, 2007) and not enough on actual behavior. Therefore, it was hypothesized that measures of conscientious-related student behaviors would increase as well.

H3: Participants in the incremental treatment will show higher conscientious-related behaviors in (a) grades, (b) missed classes, (c) task completion, and (d) survey completion.

Proactivity as a Moderator of Personality Change

It is possible that not all individuals will be equally successful at developing their personality. Proactive people for example, may be more adept at creating lasting and meaningful change in their environment because these individuals seek to change their environment as opposed to passive individuals who keep the status quo (Bateman & Crant, 1993). Proactive individuals “are relatively unconstrained by situational forces, and... [effect]

environmental change” (Bateman & Crant, 1993, p. 105). Relating this to the model of Cohen and Sherman (2014), individuals will be able to direct change through changing their social system, leading to sustainable behaviors related to conscientiousness.

Furthermore, proactive people are more likely to have favorable job ratings by supervisors and have better subjective and objective career success (Fuller & Marler, 2009). This is because proactive individuals are able to “select, create, and influence work situations that increase the likelihood of career success” (Seibert, Crant, & Kraimer, 1999, p. 847). Additionally, proactive personality may be related to relevant personal-development elements such as motivation to learn (Major, Turner, & Fletcher, 2006) and learning self-efficacy (Fuller, Liu, & Pratt, 2009, as cited in Fuller & Marler, 2009). For these reasons, and since participants will be working primarily by themselves, it is expected that those who are more proactive will be more likely to be successful at changing their behavior in both the control group and the treatment group.

H4: Proactivity will moderate increased personality change, where more proactive individuals in the experimental group will be more successful at increasing their (a) conscientiousness, (b) orderliness, (c) self-discipline, (d) grades, (e) missed classes, (f) task completion, and (g) survey completion than those who less proactive.

Self-Regulation as Exploratory Influence in Personality Change

These last two hypotheses are exploratory in nature and somewhat convoluted. Alas, they were an attempt to cover a broader range of explanations that explain personality development. First, self-regulation is the ability for someone to pursue their goals and monitor that ability over time (Carver & Scheier, 2001), which seems intuitively important in personal

development. A new framework conceptualizes self-regulation as elements of goal setting, goal operating and goal monitoring (Burnette, O'Boyle, VanEpps, Pollack, & Finkel, 2013). The ability to set, strive for and monitor one's progress towards goals makes self-regulation a potential moderator personal development. Recently the Brief Self-Control Survey (BSCS) has been used a proxy for self-regulation with self-report ratings (vanDellen, Shah, Leander, Delose, & Bornstein, 2015), which exhibited strong internal consistency between $\alpha = .81$ and $\alpha = .85$ across multiple studies. However, Maloney, Grawitch, and Barber, (2012) found this measure is multi-dimensional, not as its intended purpose as a unidimensional construct, with impulsivity and self-restraint sub-factor components. Impulsivity is the degree to which a person is reactive and excitable while self-restraint is the degree to which individuals can inhibit their reactions. Self-restraint, self-regulation and proactivity are different constructs, but each could be related to personality development differently. It is possible that self-regulation operates as a higher order construct that accounts for both proactivity and self-control. Furthermore, the BSCS restraint (Maloney et al., 2012) will be a good measure of self-regulation and predict above and beyond the BSCS by itself.

Exploratory:

H 5: Self-restraint will moderate increased personality change, where those with high self-restrained will be more successful at increasing their (a) conscientiousness, (b) orderliness, (c) self-discipline, (d) grades, (e) missed classes, (f) task completion, and (g) survey completion than those who less self-restrained.

H 6: Proactivity and self-restraint together will predict increases in (a) conscientiousness, (b) orderliness, (c) self-discipline, (d) grades, (e) missed classes, (f) task completion, and (g) survey completion above and beyond the BSCS.

Method

Two studies were conducted in order to develop an intervention for increasing student conscientiousness. The first study was the development and validation of an implicit theories of personality measure and the second was the intervention.

Study 1: Development IPT

A series of questions were developed in order to predict personality change (see Appendix B). Questions 1-14 were designed as potential items for future IPT use and questions 15, 16, and 17 examined the predictive validity of items selected for the IPT. These items were reviewed by two subject matter experts (SME's) for content deficiencies and basic item utility. SME's both had an education in I/O Psychology and were familiar with implicit theories of personality. These questions were sent out using a snowball sampling method with Facebook (n = 71) and LinkedIn (n = 5). Facebook participants were asked to share the post with friends to get a more diverse sample. There were 9 shares from the direct post on Facebook and 2 second degree shares. The LinkedIn survey links were posted on the main pages for the Society of Industrial and Organizational Psychology (SIOP; n = 4) and Business Psychology at Work (BPW; n = 1).

There were 76 respondents, age ($M = 35.24$, $SD = 16.68$). Questions were examined for appropriate variability and responding because in order for principal components analysis to work items must be similar (Cudeck, 2000); therefore, questions 1, 2, 6, 11, 12, 13, and 14 were thrown out due to high (> 3.5) or low (< 2.5) means and the remaining items had

acceptable levels of variability ($> .85$ SD) (see Appendix A, Table 1). This left the measure with 7 items and 76 participants, thus according to Costello and Osborne (2011) this study's participant to item ratio of approximately 10:1 would fall within the 63rd percentile of participant to item ratios for EFA and PCA articles on PsychINFO. Then a principle components analysis was used as a data reduction technique by fixing the number of factors to 1 with no rotation. The single factor explained 37.43% of the variance in the data. At this stage, additional items with factor loadings less than .6 were eliminated resulting in a final measure consisting of 3 items (4,7, and 8) which will be referred to as the implicit theories of personality (IPT; Appendix C). The internal consistency of these questions was acceptable ($\alpha = .76$) and the measure still contained the construct definition of implicit theories of personality.

To assess the validity of the IPT questions 15 (Q15), 16 (Q16) and 17 (Q17) were regressed on the IPT. Q15, "I have actively tried to change how I see myself or how others see me" and Q16, "I have successfully changed how I see myself or how others see me" assessed whether or not individuals had attempted or succeeded in some form of self-directed personality change. Q17 was an open response item prompted for survey takers if they responded "agree" or "strongly agree" on question 16. The responses from Q17 were then coded into a general facet or sub-facet of the IPIP-NEO (e.g., "I pick up my room more frequently than I used to," would be coded as *orderliness* on the IPIP-NEO). For regression purposes these were then coded categorically into either successful (1) or unsuccessful (0) personality change. Regression analysis provided predictive validity of the IPT and the three questions: question 15 ($R^2 = .11$, $\beta = .33$, $t = 2.97$, $p < .05$), question 16 ($R^2 = .25$, $\beta = .50$,

$t = 4.99, p < .05$) and Q17 ($R^2 = .07, \beta = .27, t = 2.32, p < .05$). Furthermore, during study 2 participants took the IPT at two different times two months apart. At time 1, ($\alpha = .79$) and at time 2, ($\alpha = .68$), giving more reliability to the instrument. The test-retest was $r = .45$ overall, $r = .45$ for control group and $r = .49$ for the incremental.

Study 2: Increasing Conscientiousness

From a Midwestern university, 66 participants were recruited for a longitudinal study through introduction to psychology (63.4%), developmental psychology (25%) and other psychology courses (11.6%) using a presentation slideshow titled “Personality and Job Readiness.” In total, 55 completed the entire experiment and passed the manipulation check. Thirteen (21.81%) were males and 42 (76.36%) were females, the majority were freshman (47%). There were a variety of majors represented, with the majority being psychology (43.64%), Business (9.1%), nursing (9.1%) and undecided (9.1%). All participants recruited were compensated with extra credit and a personality feedback report containing participants’ raw scores and relevant information related to personality and job performance. Additionally, successful completion gave students a chance to win one of three grand prizes. They were given their informed consent during the recruitment process and before the experiment began (Appendix D). These participants were assessed with two batteries of assessments, once during the first three weeks of the semester (pre-test) and the three weeks before finals week of the semester (post-test), and three surveys sent between pre-test/post-test.

Measures. Conscientiousness, orderliness, self-discipline, final grades, missed classes, task completion and survey completion (see Appendix A, Table 2) were all used as dependent variables for measuring personality change. Mean differences were between time 1 and time 2

were calculated for conscientiousness, IPT, orderliness and self-discipline. Proactivity and self-restraint were moderators in the study.

Conscientiousness, orderliness and self-discipline. Johnson's (2014) 120 - item NEO-IPIP, which is a short form of Goldberg's (1999) 300 NEO – IPIP, was used to assess the sub-facets of self-discipline ($\alpha = .53$) and orderliness ($\alpha = .71$) as well as for overall conscientiousness ($\alpha = .81$).

Grades and missed classes. Professors provided academic records including final grade (used as a percentage) and number of courses missed.

Proactivity. The Proactive Personality Scale ($\alpha = .80$) was used (Seibert, Crant & Kraimer, 1999) to measure proactivity of participants (see Appendix E).

Task and survey completion. For task completion each participant was given a worksheet that had a specific participant ID number written on it. The control group (Appendix G) and the experimental group (Appendix H) had different handouts. They were tasked with returning this at the end of the semester. Survey completion required respondents to reply to three surveys (see Appendix H) spread between pre-test and post-test in the semester.

Implicit personality theories. From study 1 a three item IPT ($\alpha = .76$) measure was created to assess the malleability of participant's personalities.

Self-regulation and subscales. The (BSCS) has been used a measure for self-regulation (vanDellen et al., 2015). However, the BSCS has been found to be a multi-dimensional measure (Maloney et al., 2012), not as its intended purpose as a unidimensional construct, with *impulsivity* and *restraint* as sub-factor components. The restraint sub-scale

($\alpha = .68$) was used for analysis in hypothesis 6 because it may more accurately predict behavior change because students will need to practice restraint to improve their conscientiousness (see Appendix I).

Design. Outside of outside of class and after signing an informed consent form (see Appendix G) participants took a battery of assessments including the conscientiousness scale on the NEO-IPIP (Johnson, 2014), Implicit Personality Theories, Proactive Personality Scale restraint sub-scale of BSCS, and demographic questions during the first few weeks of school. Participants were assigned to either the control group or the intervention group depending on the time students signed up for. There was a period of 3 weeks where students could show up to pre-determined blocks of time for the experiment. The time slots were counter-balanced for control/intervention groups. Each time slot could hold up to 7 people. The control group was given a meaningless handout (see Appendix G).

The intervention, intended to increase conscientiousness, began by providing incremental mindset training for participants modeled after another successful incremental mindset intervention by Good et al. (2003). Participants were given a presentation on the malleability of the brain through the process neuroplasticity. Then each sub-facet of the conscientiousness dimension of the IPIP was explained and participants were asked whether or not they thought it was something that they could develop or not. Then research was shown about which sub-facets have been shown to change. A handout was then passed out to participants for them to work along with them and set specific goals for the class they were recruited from (see Appendix H). This is because a previous strategy to promote long-term

behavior change encouraged individuals to create realistic, concrete plans for how to implement their new goals in specific situations (Gollwitzer & Sheeran, 2006).

In Good's et al., (2003) intervention coaching was given as part of the intervention. However, coaching could not be provided to the 50+ participants throughout the semester, participants were sent three mentoring emails (see Appendix I) to serve as a proxy for one-on-one mentoring. To ensure participants read the email a survey was included (see Appendix J). The control group was sent concurrent emails reminding participants to sign up at the end of the semester (see Appendix K) and also had a survey (see Appendix L).

At the end of the semester, students signed up to complete the 120-item IPIP-NEO, IPT, proactive personality scale and the BSCS for pretest-posttest comparison. A manipulation check was given at posttest with the question, "What was the purpose of this study?" that all participants passed. The experimental group was expected to know the purpose of the study and the control group was not.

Results

The three surveys collected throughout the term appeared to have a major issue. Both groups started out with 33 members and for each survey it appears that about 30-32 responded on time; however, about half on each survey did not enter their emails. After further investigation, it appears that this may be due to an error with slow internet connection and accidentally double clicking the demographics page of the survey, meaning completion rates will appear heavily deflated in both groups. Remember that at time 1 it was emphasized that participants should enter their emails in each part of the study, in a way then, the survey is still an assessment of conscientiousness because they should have recognized the missing

opportunity to enter their emails and attempted to retake the survey. Therefore, the results for the survey are suspect for accurate interpretation. Finally, there was a peculiar attrition related to the study. The control group had 1 member not return for the final aspect of the survey, but there were 10 in the experimental group that dropped out, which lamentably may have been the strongest effect of the experimental group.

For the first hypothesis an independent samples t-test was performed to test the mean differences between pretest and posttest on implicit theories of personality. First, difference scores were calculated for each participant and then entered as the test statistic in the independent samples t-test. For descriptive statistics on criterion-related variables see Table 2. The differences were non-significant between the experimental and the control group on IPT difference scores $t(53) = -1.63, p > .05$.

For the second hypothesis three independent sample t-tests were performed to test for mean differences on (a) *conscientiousness*, (b) *orderliness* and (c) *self-discipline* on the IPIP-NEO. Results were nonsignificant between the control and the experimental on (a) *conscientiousness*, $t(53) = .13, p > .05$. Results were nonsignificant between the control and experimental groups for (b) *orderliness*, $t(53) = .01, p > .05$, and nonsignificant for (c) *self-discipline* between the control and experimental, $t(53) = 1.23, p > .05$ (see Table 3).

Hypothesis three was tested using regression analysis to test if the experimental group significantly predicted participants' change in conscientious related behaviors of (a) *final grades*, (b) *missed classes*, (c) *task completion*, or (d) *survey completion*. For all *missed classes* and *final grades* a categorical variable “*course*” was entered in step one, to account for the variance explained between two classes, and the treatment was entered in step 2.

Therefore, controlling for *course* ($\beta = -.09, t = -.56, p > .05$), the treatment was entered in step 2 to predict the criterion (a) *final grades* and was not a significant predictor. In step 2, the treatment was found to be not significant ($\beta = .05, t = .31, p > .05, R^2 = .01, F(2,45) = .22, p > .05$). To predict the criterion (b) *missed classes*, controlling for *course* ($\beta = -.40, t = -2.97, p < .05$), the treatment was entered in step 2 and was not a significant predictor of missed classes ($\beta = .03, t = 2.00, p > .05$) though the model was predictive overall ($R^2 = .16, F(2,46) = 4.33, p < .05$). Additionally, (c) *task completion* ($R^2 = .05, F(1,53) = 3.28, p > .05$) and (d) *survey completion* ($R^2 = .03, F(1,53) = 1.54, p > .05$) were not predicted by the treatment.

Hypothesis 4 was tested with moderated regression analysis to determine if proactivity will moderate increased conscientiousness as measured by (a) *conscientiousness*, (b) *self-discipline* (c) *orderliness*, (d) *grades*, (e) *missed classes*, (f) *task completion*, and (g) *survey completion*. The experimental and control groups were categorically coded and proactivity was centered and the interaction between proactivity and condition term calculated (Aiken & West, 1991).

For each of the following moderated analyses, proactivity and treatment were entered as predictors in step one and the interaction in step of the analysis. Proactivity ($\beta = -.26, t = -1.93, p > .05$) and treatment ($\beta = .04, t = .29, p > .05$) were not significantly related to change in (a) *conscientiousness*. The interaction was also not significant ($\Delta R^2 = .00, F(3,51) = 1.13, \beta = .54, p > .05$).

The predictors proactivity ($\beta = -.17, t = -1.27, p > .05$) and treatment ($\beta = -.15, t = -1.13, p > .05$) were not significantly related to increased (b) *self-discipline*. The interaction

was also not significant ($\Delta R^2 = .00$, $F(3,51) = 1.06$, $\beta = .34$, $p > .05$). For the criterion (c) *orderliness*, neither proactivity ($\beta = -.25$, $t = 1.86$, $p > .05$) nor incremental treatment ($\beta = .02$, $t = .14$, $p > .05$) were significant predictors. The interaction was also not significant ($\Delta R^2 = .01$, $F(3,51) = 1.29$, $\beta = -.76$, $p > .05$).

Controlling for *course* ($\beta = -.11$, $t = -.71$, $p > .05$), the criterion (d) *final grades*, was not predicted by proactivity ($\beta = .09$, $t = .60$, $p > .05$) or the treatment ($\beta = .03$, $t = .22$, $p > .05$). The interaction was also not significant ($\Delta R^2 = .02$, $F(4,47) = .42$, $\beta = 1.22$, $p > .05$). Controlling for *course* ($\beta = -.40$, $t = -2.97$, $p < .05$), the criterion (e) *missed classes* was not predicted by proactivity ($\beta = .00$, $t = .01$, $p > .05$) or treatment ($\beta = .03$, $t = .20$, $p > .05$) were associated increased conscientiousness. The interaction was also not significant ($\Delta R^2 = .01$, $F(1,54) = 2.3$, $\beta = -1.06$, $p > .05$). For the criterion (f) *task completion*, neither proactivity ($\beta = -.04$, $t = -.29$, $p > .05$) nor treatment ($\beta = .25$, $t = 1.82$, $p > .05$) were predictive of task completion. The interaction was also not significant ($\Delta R^2 = .00$, $F(3,51) = 1.14$, $\beta = .45$, $t = .41$, $p > .05$). Finally, for (g) *survey completion*, neither proactivity ($\beta = -.20$, $t = -1.49$, $p > .05$) nor treatment ($\beta = -.15$, $t = -1.28$, $p > .05$) were predictive. The interaction was also not significant ($\Delta R^2 = .01$, $F(3,51) = 1.74$, $\beta = 1.29$, $t = 1.19$, $p > .05$).

Hypothesis 5 was tested with moderated regression analysis to determine if self-restraint moderated the increase in conscientiousness as a result of treatment as measured by (a) *conscientiousness*, (b) *self-discipline* (c) *orderliness*, (d) *grades*, (e) *missed classes*, (f) *task completion*, and (g) *survey completion*. The experimental and control groups were

categorically coded and self-restraint was centered, then interaction between self-restraint and condition term calculated between the two (Aiken & West, 1991).

For each of the following moderated analyses self-restraint and treatment were entered as predictors in step one and the interaction in step two for the analyses. The predictors restraint ($\beta = .01, t = .08, p > .05$) and treatment ($\beta = .02, t = .13, p > .05$) were not significantly predictive of the criterion (a) *conscientiousness*. The interaction was also not significant ($\Delta R^2 = .00, F(3,51) = .01, \beta = .01, p > .05$). For the criterion (b) *self-discipline*, the predictors self-restraint ($\beta = -.05, t = -3.71, p > .05$) and treatment ($\beta = -.17, t = -1.22, p > .05$) were not significant. The interaction was also not significant ($\Delta R^2 = .00, F(3,51) = .55, \beta = -.26, p > .05$). For the criterion (c) *orderliness*, neither self-restraint ($\beta = -.06, t = -.41, p > .05$) nor treatment ($\beta = .00, t = .00, p > .05$) were significant predictors. The interaction was also not significant ($\Delta R^2 = .00, F(3,51) = .1, b = -.36, p > .05$).

Controlling for *course* ($\beta = -.09, t = -.60, p > .05$), the criterion (d) *final grades*, was not significantly predicted by either self-restraint ($\beta = .06, t = .37, p > .05$) nor the treatment ($\beta = .06, t = -.22, p > .05$). The interaction was also not significant ($\Delta R^2 = .02, F(4,43) = 1.2, \beta = -.28, p > .05$). Controlling for *course* ($\beta = -.40, t = -2.97, p < .05$), the criterion (e) *missed classes*, was not significantly predicted by self-restraint ($\beta = -.03, t = -.20, p > .05$) or the treatment ($\beta = .03, t = .19, p > .05$). The interaction was also not significant ($\Delta R^2 = .00, F(4,44) = 2.1, \beta = -.05, p > .05$). For (f) *task completion*, neither self-restraint ($\beta = -.10, t = -.78, p > .05$) nor incremental treatment ($\beta = .21, t = 1.80, p > .05$) significant predictors of

task completion. The interaction was also not significant ($\Delta R^2 = .01$, $F(3,51) = 1.37$, $\beta = .71$, $p > .05$). Finally, for (g) *survey completion*, neither self-restraint ($\beta = .08$, $t = .58$, $p > .05$) nor treatment ($\beta = -.17$, $t = -1.23$, $p > .05$) were significant predictors of survey completion.

Additionally, the interaction was not significant ($\Delta R^2 = .01$, $F(3,51) = 2.41$, $\beta = -.42$, $p < .05$).

Hypothesis 6 was tested with a series of hierarchical regression analyses to determine if proactivity and self-restraint together as a sum score is a better predictor of personality development as measured by (a) *conscientiousness*, (b) *self-discipline*, (c) *orderliness*, (d) *grades*, (e) *missed classes*, (f) *task completion*, and (g) *survey completion* than the BSCS. In each of these analyses the treatment is controlled for by entering either course or treatment, then the BSCS is entered in step 1 and finally proactivity and self-restraint (“summed score”) will be entered into step 2. Controlling for the treatment ($\beta = .02$, $t = .13$, $p > .05$), the criterion (a) *conscientiousness* was not predicted by the BSCS ($R^2 = .01$, $F(2,52) = .37$, $\beta = .12$, $p > .05$) in step 1, and the summed score did not predict above and beyond the BSCS ($\Delta R^2 = .00$, $F(3,51) = .24$, $\beta = -.02$, $p > .05$) in step 2. Controlling for the treatment ($\beta = -.17$, $t = -1.23$, $p > .05$), the criterion (b) *self-discipline* was not predicted by the BSCS ($R^2 = .03$, $F(2,52) = .9$, $\beta = .54$, $p > .05$) in step 1, and the summed score did not predict above and beyond the BSCS ($\Delta R^2 = .05$, $F(3,51) = .84$, $\beta = .08$, $p > .05$) in step 2. Controlling for the treatment ($\beta = .00$, $t = -.01$, $p > .05$), the criterion (c) *orderliness* was not predicted by the BSCS ($R^2 = .00$, $F(2,52) = .01$, $\beta = -.02$, $p > .05$) in step 1, the summed score did not predict above and beyond the BSCS ($\Delta R^2 = .00$, $F(3,51) = .07$, $\beta = -.06$, $p > .05$) in step 2.

Controlling for the treatment ($\beta = .02, t = .31, p > .05$) and for course ($\beta = -.09, t = -.63, p > .05$), the criterion (d) *grades* was not predicted by the BSCS ($R^2 = .14, F(3,44) = .23, \beta = .36, p > .05$) in step 1, and the summed score did not predict above and beyond the BSCS ($\Delta R^2 = .00, F(4,43) = 2.2, \beta = -.19, p > .05$) in step 2. Controlling for the treatment ($\beta = .03, t = .20, p > .05$) and for course ($\beta = .02, t = -2.93, p < .05$), the criterion (e) *missed classes* was predicted by the BSCS ($R^2 = .01, F(3,45) = .9, \beta = .01, p > .05$) in step 1, and the summed score did not predict above and beyond the BSCS ($\Delta R^2 = .01, F(4,44) = 2.15, \beta = .08, p > .05$) in step 2. Controlling for the treatment ($\beta = .24, t = 1.81, p > .05$), the criterion (f) *task completion* was not predicted by the BSCS ($R^2 = .06, F(2,52) = 1.61, \beta = -.08, p > .05$) in step 2, and the summed score did not predict above and beyond the BSCS ($\Delta R^2 = .01, F(3,51) = 1.2, \beta = .01, p > .05$). Controlling for the treatment ($\beta = -.17, t = -1.24, p > .05$), the criterion (f) *survey completion* was not predicted by the BSCS ($R^2 = .03, F(2,52) = .76, \beta = .01, p > .05$) in step 1, and the summed score did not predict above and beyond the BSCS ($\Delta R^2 = .04, F(3,51) = .74, \beta = -.12, p > .05$) in step 2.

Discussion

The null results from hypothesis 1 indicate the intervention was not successful in improving student perceptions of implicit theories of personality. This could be because personality is stable or that the sample size was not strong enough to detect the effect of the treatment. As stated previously, the dispositions/temperments view of personality asserts the stability of the five factor model (FFM) (Cobb-Clark & Schurer, 2012; McCrae & Costa,

1994; McCrae & Costa, 1995; McCrae et al., 2000). Therefore, not much change would be expected in this study.

To investigate if the sample size was large enough or not, a power analysis was conducted to identify whether a small sample size was a possible culprit. There have been few studies of implicit theories that have manipulated or trained mindsets. The oldest record of successful implicit theory manipulation found dates back to “unpublished raw data” (Dweck, Tenny, Dinces, 1982, as cited in Dweck & Leggett, 1988) which does not infer anything about an effect size. Bergen (1991, as cited in Chiu et al., 1997) also fails to elucidate the issue with an unpublished dissertation changing implicit theories through an experiment. Chi-Yue et al. (1997) published a study on implicit theories of personality; however, pretest posttest on their measure was not assessed as it was here. An effect was found with 46 student participants, when predicting lay dispositionism after an implicit theory manipulation as the criterion. However, this manipulation was over a single sitting and not over the course of a semester and cannot be interpreted unequivocally. Recently Good et al. (2003) manipulated implicit theories of intelligence and predicted standardized math scores $t(65) = 2.07, p = .041$, Cohen’s $d = .52$. However, this is the difference in the criterion between groups, not as it was here in the predictor. Due to the limitations in previous research it is not clear what the effect size should be. However, an effect size needed for the unbalanced sample in this study was calculated (Cohen’s $d = 1$). Therefore, it is easy to conclude that there was not a large enough sample size. Considering that the means were in the right direction and were approaching significance, future research in this area should consider a moderate effect size and need no

more than 88 participants equally split between an incremental group and a control group (assuming a $d = .5$).

Lamentably, the results of a failed manipulation cascaded on the effects of the other hypotheses. The null results for hypothesis 2 and 3 indicate that the non-significant effects of treatment had a non-significant effect on participants' personality development in conscientiousness measures. The null results for hypothesis 4 do not provide support that proactivity was a moderator in personality development. The null results for hypothesis 5 indicate that self-restraint does not moderate increased personality development. Finally, the results from hypothesis 6 indicate that proactivity and self-restraint do not make a better predictor personality development than the BSCS.

Future Research and Limitations

Clearly there is not robust evidence for an intervention in personality development; however, in the context of the greater investigation of personality change there is still value to be gained in understanding the limitations of this study and implications for future research on personality development in college students. First, the importance of strong criterion development should have been emphasized before an experimental manipulation. Future research should either elaborate on the development of the IPT, because exhibited the strongest results from this study, or use a measure that is publically available (Chiu et al., 1997). During the post-hoc review of literature to explain the null results the 3-item measure form Chiu et al. (1997) was stumbled upon despite efforts to identify the measure before it began. It is advisable to use their measure for personality interventions because of its tested

psychometric properties, in particular, its resistance to social-desirability (which may have been an issue for the current measure).

The second future recommendation is to focus future research efforts on a literature review upon Mroczek and Little (2014) and their *Handbook of Personality Development*, which was also a post-hoc finding. The rate and complexity at which research is being conducted has accelerated from the 19th century and the design of this experiment was based upon a literature review began during the late 2014 and early 2015 year and the handbook was either not available or not at the top of the searches I was performing. Regardless, future research should consider their findings and seek to explore particular times/changes in personality and explain the antecedents involved in personality development through cross sectional research. Furthermore, future research examining personality development should consider using the behavioral measures and methods of assessing student conscientiousness identified in this experiment.

These future research recommendations highlight well the limitations of this study. Some may point to the sample size as the largest limitation, but there is a substantive argument that there was inadequate theory to explain the research. First, the use of a quickly developed IPT measure may have weakened the effect of the intervention. The intervention may also be weak because of the range restriction of these high performing students recruited. These students were not a random sample, they volunteered early in the semester for the project and exhibited high performance in their courses ($M = 92\%$, $SD = 7\%$), which likely limited the treatment. A sample that targets those with poor orderliness, self-discipline and conscientiousness may yield stronger results. Furthermore, the sample of psychology students

may also be a limitation. Some of the topics in this class may have contaminated the results of a longitudinal study (e.g., implicit theories, personality, and personal development). Finally, the method used in this study was a 30 minute implicit theory training session, which was actually closer to 20 minutes when considering 10 was appropriated to taking the survey. This would have been an incredible effect had the treatment been successful. Thus, the sample size, method of selection and population were limitations, but may also be explained by theory.

Ryan and Deci (2000) describe their self-determination theory (SDT) of motivation as a continuum of purely intrinsic motivation to purely extrinsic motivation. The theory suggests that the social environment can promote intrinsic motivation by supporting innate psychological needs of autonomy, relatedness and competence. With the needs of autonomy, relatedness and competence met, individuals will tend to exhibit more intrinsically motivated behaviors and creativity (Koestner, Ryan, Bernieri & Holt, 1984). One study with medical students (Williams & Deci, 1996) found that students were more intrinsically motivated in their learning when students rated instructors as more autonomy-supportive. This study also showed that medical students were more likely to have intrinsic motivation and adoption of the biopsychosocial model of healthcare. The implication for personality development is that researchers should provide autonomy support, as opposed to extrinsic rewards (e.g., extra-credit and prizes) so that participants are more likely to adopt the motivation for improving conscientiousness.

Motivation may not be the only theoretical determinant of personality development. Possible antecedents to motivation could include core self-evaluations (CSE), which is a higher-order, broad trait, of personality that predicts motivation and performance (Erez &

Judge, 2001) with generalized self-efficacy, emotional stability, locus of control and self-esteem as components within this trait. CSE can be measured separately with these the four components aggregated into one score or a single measure of CSE (Judge, Erez, Bono, & Thoresen, 2003). The single measure was shown to correlate with job satisfaction, job performance and life satisfaction. Because CSE's are how a person evaluates their competence, worthiness and capability (Judge, Locke, Durham, & Kluger, 1998) they are a likely antecedent for personality change.

Conclusion and Recommendations

In a field with dwindling experimental studies and actual measures of behavior (Baumeister et al., 2007) this study was a noble cause. However, the results were null and there are substantive arguments to suggest this is because of poor design and small sample size. The domain of personality development should seek to explain the changes seen in human development and develop methods for helping individuals attain their goals (personal development) as well as prevent the decline of positive attributes seen throughout the lifespan development (e.g., openness to experience). It is an exciting time to be researching on this topic and future research should be careful use appropriate sampling, methods and theory outlined in this this discussion.

References

- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.
- Ashford, S., Edmunds, J., & French, D. P. (2010). What is the best way to change self-efficacy to promote lifestyle and recreational physical activity? A systematic review with meta-analysis. *British Journal of Health Psychology, 15*(2), 265-288.
- Barrick, M. R., & Mount, M. K. (1991). The big five personality dimensions and job performance: A meta-analysis. *Personnel Psychology, 44*(1), 1-26.
- Barrick, M. R., & Mount, M. K. (1993). Autonomy as a moderator of the relationships between the Big Five personality dimensions and job performance. *Journal of Applied Psychology, 78*(1), 111.
- Barrick M. R., Mount M. K., & Judge T. A. (2001). Personality and job performance at the beginning of the new millennium: What do we know and where do we go next? *International Journal of Selection and Assessment, 9*, 9-30.
- Bateman, T. S., & Crant, J. M. (1993). The proactive component of organizational behavior: A measure and correlates. *Journal of Organizational Behavior, 14*(2), 103-118.
- Baumeister, R. F., Gailliot, M., DeWall, C. N., & Oaten, M. (2006). Self-regulation and personality: How interventions increase regulatory success, and how depletion moderates the effects of traits on behavior. *Journal of Personality, 74*(6), 1773-1802.
- Baumeister, R. F., Vohs, K. D., & Funder, D. C. (2007). Psychology as the science of self-reports and finger movements: Whatever happened to actual behavior? *Perspectives on Psychological Science, 2*(4), 396-403.

- Bergen, R. (1991). *Beliefs about intelligence and achievement-related behaviors*. Unpublished doctoral dissertation, University of Illinois, Urbana-Champaign. As cited in C. Y. Chiu, Y. Y. Hong, & C. S. Dweck. (1997). Lay dispositionism and implicit theories of personality. *Journal of Personality and Social Psychology*, 73(1), 19.
- Block, J. (2000). Three tasks for personality psychology. *Developmental Science and the Holistic Approach*, pp. 155-161.
- Burnette, J. L., O'Boyle, E. H., VanEpps, E. M., Pollack, J. M., & Finkel, E. J. (2013). Mind-sets matter: A meta-analytic review of implicit theories and self-regulation. *Psychological Bulletin*, 139(3), 655.
- Buss, A. H., & Plomin, R., (1984). *Temperament: Early developing personality traits*. Hillside, NJ: Lawrence Erlbaum & Associates.
- Caligiuri, P. M. (2000). The big five personality characteristics as predictors of expatriate's desire to terminate the assignment and supervisor-rated performance. *Personnel Psychology*, 53(1), 67-88.
- Carver, C. S., & Scheier, M. F. (2001). *On the self-regulation of behavior*. Cambridge University Press.
- Caspi, A., Elder, G. H., & Bem, D. J. (1988). Moving away from the world: Life-course patterns of shy children. *Developmental Psychology*, 24(6), 824.
- Chiu, C. Y., Hong, Y. Y., & Dweck, C. S. (1997). Lay dispositionism and implicit theories of personality. *Journal of Personality and Social Psychology*, 73(1), 19.

- Cobb-Clark, D. A., & Schurer S. (2012). The stability of big-five personality traits. *Economics Letters*, *115*(1), 11-15. Retrieved from <http://dx.doi.org/10.1016/j.econlet.2011.11.015>.
- Cohen, G. L., & Sherman, D. K. (2014). The psychology of change: Self-affirmation and social psychological intervention. *Annual Review of Psychology*, *65*, 333-371.
- Costello, A. B., & Osborne, J. W. (2011). Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical Assessment Research and Evaluation*, *10*(7), 1-9. Retrieved from <http://pareonline.net/getvn.asp>.
- Cudeck, R. (2000). Exploratory factor analysis. In T. E. A. Tinsley & S. D. Brown (Eds.), *Handbook of applied multivariate statistics and mathematical modeling* (Chapter 10, pp. 265-296). Academic Press.
- Duckworth, A. L., Grant, H., Loew, B., Oettingen, G., & Gollwitzer, P. M. (2011). Self-regulation strategies improve self-discipline in adolescents: Benefits of mental contrasting and implementation intentions. *Educational Psychology*, *31*(1), 17-26.
- Dweck, C. S., & Leggett, E. L. (1988). A social-cognitive approach to motivation and personality. *Psychological Review*, *95*(2), 256.
- Dweck, Tenny, Dinces (1982). [Implicit theories of intelligence as determinants of achievement goal choice]. Unpublished raw data. As cited in Dweck, C. S., & Leggett, E. L. (1988). A social-cognitive approach to motivation and personality. *Psychological review*, *95*(2), 256.
- Engler, B. (2013). *Personality theories: An introduction* (9th ed.). Belmont, CA: Wadsworth, Cengage Learning.

- Erez, A., & Judge, T. A. (2001). Relationship of core self-evaluations to goal setting, motivation, and performance. *Journal of Applied Psychology, 86*(6), 1270.
- Fuller, B., & Marler, L. E. (2009). Change driven by nature: A meta-analytic review of the proactive personality literature. *Journal of Vocational Behavior, 75*(3), 329-345.
- Fuller, Liu, & Pratt. (2009). *Toward a better understanding of personality, self-efficacy cognitions, and entrepreneurial intentionality*. Paper presented at Southwest Academy of Management meetings, Oklahoma City, OK. In B. Fuller & L. E. Marler. (2009). Change driven by nature: A meta-analytic review of the proactive personality literature. *Journal of Vocational Behavior, 75*(3), 329-345.
- Goldberg, L. R. (1999). A broad-bandwidth, public domain, personality inventory measuring the lower-level facets of several five-factor models. *Personality Psychology in Europe, 7*(1), 7-28.
- Gollwitzer, P. M., & Sheeran, P. (2006). Implementation intentions and goal achievement: A meta-analysis of effects and processes. *Advances in Experimental Social Psychology, 38*, 69-119.
- Good, C., Aronson, J., & Inzlicht, M. (2003). Improving adolescents' standardized test performance: An intervention to reduce the effects of stereotype threat. *Journal of Applied Developmental Psychology, 24*(6), 645-662.
- Hogan, R., Hogan, J., & Roberts, B. W. (1996). Personality measurements and employment decisions: Questions and answers. *American Psychologist, 51*(5), 469-477.
- Hogan, R., & Shelton, D. (1998). A socioanalytic perspective on job performance. *Human Performance, 11*(2-3), 129-144.

- Jackson, J. J., Hill, P. L., Payne, B. R., Roberts, B. W., & Stine-Morrow, E. A. (2012). Can an old dog learn (and want to experience) new tricks? Cognitive training increases openness to experience in older adults. *Psychology and Aging, 27*(2), 286.
- Jang, K. L., Livesley, W. J., & Vernon, P. A. (1996). Heritability of the big five personality dimensions and their facets: a twin study. *Journal of Personality, 64*(3), 577-592.
- Johnson, J. A. (2014). Measuring thirty facets of the five factor model with a 120-item public domain inventory: development of the IPIP-NEO-120. *Journal of Research in Personality, 51*, 78-89.
- Judge, T. A., Erez, A., Bono, J. E., & Thoresen, C. J. (2003). The core self-evaluations scale: Development of a measure. *Personnel Psychology, 56*(2), 303-331.
- Judge, T. A., Locke, E. A., Durham, C. C., & Kluger, A. N. (1998). Dispositional effects on job and life satisfaction: the role of core evaluations. *Journal of Applied Psychology, 83*(1), 17.
- Koestner, R., Ryan, R. M., Bernieri, F., & Holt, K. (1984). Setting limits on children's behavior: The differential effects of controlling vs. informational styles on intrinsic motivation and creativity. *Journal of Personality, 52*(3), 233-248.
- Larsen, R. J., & Buss, D. M. (2014). *Personality psychology: Domains of knowledge about human nature* (5th ed.). New York, NY: McGraw-Hill Education.
- Leikas, S., & Salmela-Aro, K. (2015). Personality trait changes among young Finns: The role of life events and transitions. *Journal of Personality, 83*(1), 117-126.

- Maloney, P. W., Grawitch, M. J., & Barber, L. K. (2012). The multi-factor structure of the Brief Self-Control Scale: Discriminant validity of restraint and impulsivity. *Journal of Research in Personality, 46*(1), 111-115.
- Major, D. A., Turner, J. E., & Fletcher, T. D. (2006). Linking proactive personality and the Big Five to motivation to learn and development activity. *Journal of Applied Psychology, 91*(4), 927.
- McAdams, D. P., & Pals, J. L. (2006). A new Big Five: Fundamental principles for an integrative science of personality. *American Psychologist, 61*(3), 204.
- McCrae, R. R., & Costa, P. T. (1994). The stability of personality: Observations and evaluations. *Current Directions in Psychological Science, pp.* 173-175.
- McCrae, R. R., & Costa, P. T. (1995). Trait explanations in personality psychology. *European Journal of Personality, 9*(4), 231-252.
- McCrae, R. R., Costa Jr, P. T., Ostendorf, F., Angleitner, A., Hřebíčková, M., Avia, M. D., Sanz, J., Sanchez-Bernardos M. L., Kusdil M. E., Woodfield R., Saunders, P. R., & Smith P. B., (2000). Nature over nurture: temperament, personality, and life span development. *Journal of Personality and Social Psychology, 78*(1), 173.
- Mroczek, D. K., & Little, T. D. (Eds.). (2014). *Handbook of personality development*. Psychology Press.
- Mueller, C. M., & Dweck, C. S. (1998). Praise for intelligence can undermine children's motivation and performance. *Journal of Personality and Social Psychology, 75*(1), 33.

- Muraven, M., Baumeister, R. F., & Tice, D. M. (1999). Longitudinal improvement of self-regulation through practice: Building self-control through repeated exercise. *Journal of Social Psychology, 139*, 446-457.
- Personality. (n.d.a). In *Oxford English dictionary online*. Retrieved from <http://www.oed.com/view/Entry/141486?redirectedFrom=personality#eid>.
- Personality. (n.d.b). In *Google definitions*. Retrieved from <https://www.google.com/webhp?sourceid=chrome-instant&ion=1&espv=2&ie=UTF-8#q=personality%20definition>.
- Roberts, B. W., Walton, K. E., & Viechtbauer, W. (2006). Patterns of mean-level change in personality traits across the life course: A meta-analysis of longitudinal studies. *Psychological Bulletin, 132*(1), 1.
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*(1), 68.
- Sackett, P. R., & Walmsley, P. T. (2014). Which personality attributes are most important in the workplace? *Perspectives on Psychological Science 9*(5), 538-551.
- Seibert, S. E., Crant, J. M., & Kraimer, M. L. (1999). Proactive personality and career success. *Journal of Applied Psychology, 84*(3), 845-874.
- Stevenson, J., & Clegg, S. (2011). Possible selves: Students orientating themselves towards the future through extracurricular activity. *British Educational Research Journal, 37*(2), 231-246.

- Thorndike, E. L. (1913). *An introduction to the theory of mental and social measurements* (2nd ed. Rev. & Enlarged). Teacher's College, Columbia University. Lancaster, PA: New Era Printing Company.
- vanDellen, M. R., Shah, J. Y., Leander, N. P., Delose, J. E., & Bornstein, J. X. (2015). In good company managing interpersonal resources that support self-regulation. *Personality and Social Psychology Bulletin*, 0146167215580778.
- Williams, G. C., & Deci, E. L. (1996). Internalization of biopsychosocial values by medical students: A test of self-determination theory. *Journal of Personality and Social Psychology*, 70(4), 767.

Appendix A: Tables and Figures

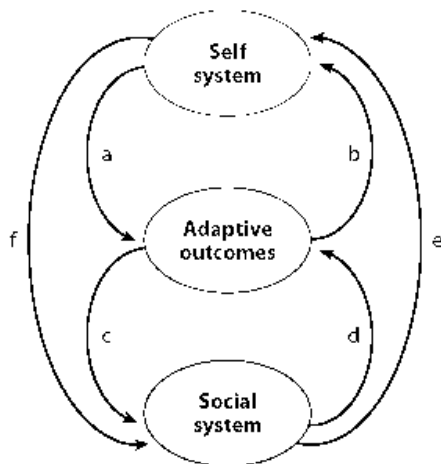


Figure 1. Cycle of Adaptive Potential (adopted from Cohen & Sherman, 2014)

Table 1

Means and Standard Deviations of All Items in the Survey. Eigen Values were Included for Items with Similar Item Consistency

Item	M	SD	Eigen Value
1	4.37	0.73	
2	2.28	0.92	
3	3.38	0.97	-0.13
4	3.71	0.89	0.82
5	3.18	1.04	0.4
6	3.64	0.92	
7	3.04	1.13	0.76
8	3.3	0.9	0.77
9	2.8	0.98	0.56
10	2.53	1.14	0.54
11	3.89	0.81	
12	3.82	0.74	
13	2.59	0.88	
14	2.05	0.86	

Table 2

Dependent Variables and Their Means (M), Standard Deviations (SD) and Internal Consistency (α)

	M	SD	N	α
Conscientiousness	3.80	0.40	55	0.81
Orderliness	3.56	0.77	55	0.71
Self-Discipline	3.61	0.61	55	0.53
Proactivity	3.74	0.48	55	0.80
IPT	3.33	0.85	55	0.76
Self-Restraint	3.08	0.75	55	0.68
Survey Completion	0.71	0.32	55	-
Missed Classes	2.88	3.51	48	-
Final Grade	0.93	0.06	48	-
Task	0.75	0.44	52	-

*All for time 1 except restraint was for time 2.

Table 3

Pretest-posttest Means, Standard Deviations and Difference Scores Compared between Control and Experimental Groups

	Pretest			Posttest			<i>d</i>	
	M	SD	N	M	SD	N	M	SD
Control Group								
Conscientiousness	3.41	0.70	32	3.22	0.68	32	0.02	0.25
IPT	3.79	0.46	32	3.77	0.40	32	-0.19	0.72
Orderliness	3.48	0.84	32	3.43	0.75	32	-0.04	0.53
Self-Discipline	3.54	0.67	32	3.59	0.66	32	0.05	0.46
Experimental Group								
Conscientiousness	3.22	1.03	22	3.39	0.82	22	0.02	0.31
IPT	3.81	0.28	22	3.79	0.36	22	0.20	1.02
Orderliness	3.68	0.66	22	3.63	0.83	22	-0.07	0.60
Self-Discipline	3.71	0.51	22	3.61	0.45	22	-0.08	0.45

Appendix B: Implicit Personality Theories Questionnaire

1. People have control over their own behavior.
2. People understand the forces that affect their behavior.
3. Factors in the environment have the strongest influence on a person's behavior.
4. People can develop their personality over their lifetime, if they chose to.
5. Inherited characteristics have the strongest influence on a person's behavior (R).
6. A person's personality is stable and does not change over time (R).
7. I could change my personality, if I wanted to.
8. Personality is more changeable than determined by nature.
9. Personality is largely stable. (R)
10. Some people can't be changed. (R)
11. People should strive to have well rounded personalities.
12. People become who they are today largely because of their upbringing.
13. Nature is stronger than nurture, when it comes to personality.
14. People should not try to change themselves.
15. I have actively tried to change how I see myself or how others see me. (Dependent variable)
16. I have successfully changed how I see myself or how others see me. (Dependent Variable)
17. (IF LOGIC Previous Question) Agree/Strongly Agree ask → How have you successfully changed how I see myself or how others see me? What aspect was it? DV (Open response)

Questions 1-16 have the following Likert response scale:

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
----------------------	----------	---------	-------	----------------

Appendix C: Implicit Personality Theories

Statements had the following Likert response scale:

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
----------------------	----------	---------	-------	----------------

1. People can develop their personality over their lifetime, if they chose to.
2. I could change my personality, if I wanted to.
3. Personality is more changeable than determined by nature.

Appendix D: Informed Consent Form

Personality and Job Readiness - Informed Consent Form

Purpose and duration: For science, there are many ambiguous and unanswered questions about personality that will be investigated through this study. There are three parts to this study. First, you will answer a **series of questions** and **complete a task** that will take **less than 30 minutes** of your time at the beginning of the semester. Then **three emails** will be sent to your personal email throughout the semester (September, October and November) **with a brief survey** as part of the study. Finally, at the conclusion of the semester you will be asked a series of questions, which will take between **15 and 30 minutes**.

Voluntary Participation: Your participation is voluntary and you are free to withdraw at any point. Feel free to email the principal investigator (Kenton) at krkloster@stcloudstate.edu if you decide to discontinue the study.

Benefits and Risks: Participating in this study affords the benefits of bettering science, understanding oneself and potential to win prizes. Your data could be compromised if stolen, but measures will be taken to keep your data secure.

Personality and Job Readiness Profile: Successful completion of your study will grant you the development of a profile. To clarify, in some cases you may be compared to your peers using a personality measure in job settings. Knowing how you score on this is useful information, but may not be pleasant to hear (the risk). Expect completion before February. This is a time intensive profile to create for 50-200 students, but could be rewarding for both of us.

Prizes: As part of your participation in this study you will be given the opportunity to win 1 of three prizes: (1) Roku or (2) Chrome Casts. No person can win more than one prize, people will be selected at random. Chances of winning are between 3%-12% depending on number of participants.

Confidentiality and Data: If you choose to participate **this experiment will require information about your grades** (e.g., cumulative percent and assignments) in the course you are taking. This information will be given over a flash drive to the researcher and immediately downloaded onto a password protected computer. Once your profile is completed and sent to you your data will be coded so that your information cannot be identified. Only the researcher and advisor will have access to your data. Study results will be presented in aggregate form with no more than 2-3 descriptors presented together.

Study Results: If you have questions please ask now or you may contact the researcher with questions later at krkloster@stcloudstate.edu or advisor at dsprotolipac@stcloudstate.edu. You can request results now or at the end of the semester.

Your signature below indicates you are at least 18 years of age and consent to participate in this study

Name: _____ Email: _____

X _____ Date: _____

Contact Information

Researcher: Kenton R Kloster
Email: krkloster@stcloudstate.edu

Advisor: Daren Protolipac
Email: dsprotolipac@stcloudstate.edu

Appendix E: Proactive Personality Scale

1. I am constantly on the lookout for new ways to improve my life.
2. Wherever I have been, I have been a powerful force for constructive change.
3. Nothing is more exciting than seeing my ideas turn into reality.
4. If I see something I don't like, I fix it.
5. No matter what the odds, if I believe in something I will make it happen.
6. I love being a champion for my ideas, even against others' opposition.
7. I excel at identifying opportunities.
8. I am always looking for better ways to do things.
9. If I believe in an idea, no obstacle will prevent me from making it happen.
10. I can spot a good opportunity long before others can.

Appendix F: Control Group Handout

Please describe your extra-curricular activities related to the most recent summer break.

What course are you participating in the research through?

What is your teacher's name?

Appendix G: Incremental Group Handout

Goal Setting

Course: *Students choose which course*.

Three Definitions of Personality

- Trait:
- Identity:
- Reputation:

To become more orderly/organized I will...

1. _____
2. _____
3. _____

e.g., buy a planner, ...

To grow in self-discipline I will...

4. _____
5. _____
6. _____

e.g., go to every class, ...

Coaching orderliness:

- “Everything has a place and I put it there”
- “Failing to plan is planning to fail” – Benjamin Franklin
- “I enjoy having a clean room”
- “Always have a place for your wallet, cell-phone, keys”

Coaching self-discipline:

- “Class time is study time”
- “Grades are an objective measure of your performance”
- “I am always prepared for class”
- “I use my time wisely”

Course-Tracker: An Example

Imagine a student, Joe, enrolled in Hypothetical 120. This class shouldn't require more than a few hours of work each week and meets on M/W/F. The student decides to meet with the professor one-on-one because it isn't that busy the first week. Joe goes to all the classes and each day he brings his pen and paper to class and talks about the material with friend afterwards. There was a quiz on Friday, but the score wasn't posted by the weekend.

Week 2 Joe sleeps in through one of his class, but gets the notes from a friend. The other two days he attends and takes notes, but doesn't review. By the end of the week Joe's quiz from week 1 was posted for a 5/5.

Try filling out the grade tracker for weeks 1/2 for Joe.

Class: Hypothetical 120

Week	Prepare	Attend	Review	1x1	Grade/Week
1					
2					

Class: _____

Week	Prepare	Attend	Review	1x1	Grade/Week
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					

Below are a description of each of the elements involved in the course tracker. For weeks already passed or for future weeks missed, either try to fill them in to the best of your estimation or mark them as a '-'.

Week—Numbered 1-17, each week represents the week of school that you are currently in.

Prepare—Each class is different and will require different amounts of preparation in order to reach your desired goal for the class. Please take a few moments to decide what that is for the course you choose.

Attend—Did you attend class? Take notes? Pay attention? Volunteer?

Review—Again, reviewing will require different amounts of effort for each class. What is the appropriate amount of reviewing to reach your goals for this class?

1x1—This stands for 1-on-1. This could be having a 1 on 1 with a professor or a teaching assistant for the class.

Grade/Week—Each week, check your grades to track your progress and enter your grade in the far right column for the appropriate week.

Appendix H: Emails and Surveys

Incremental Emails

Incremental Email 1

BCC: Participant A, etc.

Subject: Mindsets Matter

Hello!

Your task this semester is to increase your conscientiousness by practicing orderliness and self-discipline in one of your classes. Conscientiousness influences important life outcomes such as health, academic success, life savings and performance. Through repeated and directed effort you can begin to see yourself as conscientious and it will form as part of your identity. The more habits you create (e.g., showing up on time, organizing your closet, starting projects early, making your bed, balancing your check book, etc.) the more others will see you as conscientious too!

There's a lot of time left in the semester and even more in college. Use this time as an opportunity to reach the goals you set for yourself with a growth mindset. Believe that you can make change, little by little, one habit at a time.

Please take a few moments to fill out this survey:

Link provided here

Sincerely,

Kenton Kloster

Incremental Email 2

BCC: Participant A, etc.

Subject: Persisting Through Adversity

Hello!

You're about 1/2 of the way through the semester! At some level or another you've had some success at improving yourself, so give yourself a pat on the back! In the last email I spoke about developing identity as a conscientious person and I'd like to build off that a little more. Psychologists have identified one means of personality change is through changing *personal narratives*. A personal narrative is a story about your life. It is how you describe yourself to others. Imagine Sam, a high school student. Sam doesn't hang with the 'right crowd', generally gets in trouble and performs poorly in school. Sam doesn't see himself as someone who would study in college, but does see himself as a dropout, mechanic or laborer. This personal narrative Sam has of himself was developed through life experiences and upbringing. It dictates what Sam does, or does not do.

Has conscientiousness become part of your personality? Personal narrative?

Conscientious individuals tend to outperform less conscientious people. Developing your conscientiousness could benefit you in your future career. Therefore, attending class, turning in assignments on time, starting projects early in the semester should be seen a reward instead of a chore.

Keep up the good work! Please take a few moments to fill out this survey [*link to survey*](#).

Sincerely, Kenton Kloster

Incremental Email 3

BCC: Participant A, etc.

Subject: Mindsets Matter

Hello!

Carol Dweck, in her book Mindsets, discusses how an individual can have either a growth or a fixed mindset. Mindsets are beliefs a person holds about various aspects themselves (e.g., intelligence, relationships, etc.). These mindsets can strongly influence our choices and behavior. For example, believing that intelligence can be developed (growth-mindset) leads to more effort put forth studying by students compared to those who believe that it cannot (fixed-mindset). Similar to intelligence, mindsets apply to personality. If a person believes they can improve themselves, they are more likely to put forth repeated and directed effort, to see the desired change.

What is your mindset towards personality? In particular, conscientiousness?

Keep up the good work!

Thank you for your effort and participation. Please take a few moments to take this survey:

Link provided here

Sincerely,

Kenton Kloster

Incremental Survey

Survey questions in each article were on a response scale from Strongly Disagree to Strongly Agree. Each survey was the same for each email.

1. Have you found yourself practicing orderliness more than last semester?
2. I value orderliness.
3. I feel that I have become more orderly.
4. I have been regularly using the course tracker.
5. I value self-discipline.
6. I feel that I have become more self-disciplined.

Control Group Emails

Control Group Emails

Email 1/2/3

BCC: Participant B, etc.

Subject: Personality and Job Readiness

Hello!

Thank you for your continued support in this research! Prizes will be announced in December. Please take a few moments to fill out a brief survey.

Link to survey

Sincerely,

Kenton Kloster

Control Group Survey

Control Group Survey

Survey questions in each article were on a response scale from Strongly Disagree to Strongly Agree. Each survey was the same for each email.

1. I enjoy the classes that I'm taking right now.
2. I see ways that I can apply what I'm learning in class to my future job.
3. I participate in class.
4. I have learned a lot in the current course I'm taking.

Appendix I: Brief Self Control Scale

Brief Self-Control Scale items

1. I am good at resisting temptation
2. I have a hard time breaking bad habits
3. I am lazy
4. I say inappropriate things
5. I do certain things that are bad for me, if they are fun
6. I refuse things that are bad for me
7. I wish I had more self-discipline
8. People would say that I have iron self- discipline
9. Pleasure and fun sometimes keep me from getting work done
10. I have trouble concentrating
11. I am able to work effectively toward long-term goals
12. Sometimes I can't stop myself from doing something, even if I know it is wrong
13. I often act without thinking through all the alternatives

Restraint sub-factor of the Brief Self Control Scale

1. I am good at resisting temptation.
2. I have a hard time breaking bad habits. (R)
3. I wish I had more self-discipline. (R)
4. People would say that I have iron self-discipline.