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# Academic and Social Engagement in University Students: Exploring Individual Differences and Relations with Personality and Daily Activities

A Dissertation submitted in partial satisfaction
of the requirements for the degree of

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by

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"She felt... how life, from being made up of little separate incidents which one lived one by one, became curled and whole like a wave which bore one up with it and threw one down with it, there, with a dash on the beach." (Virginia Woolf, *To the Lighthouse*)

Research suggests that we tend to overestimate how much we have changed in the past five years and underestimate how much we will change in the future. Life is composed of many events and people and whether those are joyful or painful, they often leave their mark. Most of what I have accomplished and ho I have become have happened because of those events and people. During my time in graduate school, I have truly changed, and the people around me were the catalysts. Having had wonderful and smart people around me has challenged me to become an overall better person.

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*Ἓν οἶδα ὅτι ουδὲν οἶδα* so it is inevitable that I keep learning about psychology, people, life, and myself!

ABSTRACT OF THE DISSERTATION

Academic and Social Engagement in University Students: Exploring Individual Differences and Relations with Personality and Daily Activities

by

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Academic and social engagement can be used to better motivate students to get involved with their curricula and other campus activities. Engagement can help students stay in university and graduate, help make the university experience a pleasant one, and help students get good grades and learn. Though there is much information in the literature about the many benefits of being engaged and the characteristics of students' academic engagement, there is little about students' social engagement in a non- learning context. Even more, many changes may occur during university years but there is little research on how academic and social engagement may change for university students. This dissertation presents a new measure that assesses social engagement in university students, it evaluates students' academic and social engagement, and models how the two engagement types may change across two academic quarters as a function of students' personality and daily activities. The findings show academic and social engagement are strongly related to each other. Academic engagement was predicted by conscientiousness,

extraversion, openness to experience, time students spent studying and going to class. Additionally, those students who started off high on extraversion and openness showed an increase in academic engagement over time, and those students who started off low on each of the two traits showed a decrease in academic engagement. Social engagement was best predicted by extraversion and openness to experience, as well as time spent on activities with friends, exercising, and housework (negative relation). This preliminary exploratory information can help with a better understanding of what engages and motivates students for future studies.

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When students are engaged with the university experience, it acts as a motivator helping them persist, improve their academic performance, and increase their general well- being. That is, when students are encouraged to interact meaningfully with their curricula, their professors, their classmates both inside and outside the classroom, when they are encouraged to feel proud of their university, and to do things to contribute to the university community, they generally have better learning outcomes and higher life satisfaction outcomes (Shernoff, Csikszentmihalyi, Shneider, & Shernoff, 2003; Carter, McGee, Taylor, & Williams, 2007; Ramey, Busseri, Khanna, Hamilton, & Rose-Krasnor, 2010; Jordan & Nettles, 1999). Student engagement has real consequences for students, and it should be studied in its own right beyond its relation to academic performance. This dissertation aims to explore student engagement in this way. Specifically, student engagement definitions, the academic and social engagement domains, and the importance of engagement as a motivator for student persistence are presented. In part 1, a short definition of students' social engagement and a measure with which to measure student engagement within this domain is discussed. In part 2 correlations of academic and social engagement with the important student characteristics, student daily activities and personality are presented. Finally, in part 2 I present longitudinal analyses for changes in academic and social engagement, and how those relate to students' daily activities and personality.

**Student Engagement**

In the university setting, performance is important, and much research has been done to find the things students and universities can do to improve performance outcomes

(i.e. better grades, persistence, and graduation). Student engagement has often been used to predict these performance outcomes. Engagement has generally been defined as the physical and psychological energies students themselves devote to educationally purposeful activities that will lead to desired outcomes (Astin, 1984; Huh & Kuh, 2002). Student engagement is a multidimensional construct, and it includes behavioral, cognitive, and emotional engagement components (Krause & Coates, 2008). According to Krause & Coates (2008) behavioral engagement is a variety of behaviors related to the university experience, such as studying, being involved in clubs, and attending classes. Cognitive engagement involves the values students hold about their education, and their opinions about their university, other students, faculty, and staff. Finally, emotional engagement includes variables such as how enjoyable the students feel their experience is. All of these components have been examined mostly in the domain of academic engagement or the learning context. However, there is a need to examine engagement in other engagement domains (Fredricks, Blumenfeld & Paris, 2004). This can lead to better interventions as engagement characteristics can be changed for each domain. In the current work we seek to expand the examination of student engagement within the academic domain and we seek to better develop knowledge in the social domain.

**Academic and Social Engagement**

For university students the relation between academic and social engagement is in most cases synergistic, and often the literature does not distinguish between the two. Both are defined within a general academic engagement construct. Such operational definitions include not only academically related behaviors, for example, studying, and attending

class, but also social behaviors in which the activities of interest are social with a learning orientation, such as being part of a study group and contacting other students and instructors to discuss class materials. High academic engagement has often been related to wellbeing and general life satisfaction in various student populations (Shernoff et al., 2003; Carter et al., 2007; Ramey et al., 2010, Jordan et al., 1999). Research has found the longer students are in university, the higher their engagement (Astin, 1984; Ahlfeldt, Mehta, & Sellnow, 2005), and the more engagement promoting behaviors they develop (Roebken, 2007). High levels of engagement are related to persistence from the first year to the second year (Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008), though there is not much about the relation between engagement and persistence in later years of study. Generally, academic engagement is a strong predictor of effort (De Raad & Schouwenburg, 1996) , and motivation (Chamorro-Premuzic, & Furnham, 2008) and effort regulation (Richardson, Abraham, & Bond, 2012) predict university GPA, and persistence from year one to year two of college for minority students (Allen, 1999). Students are more likely to try hard and persist when they feel involved and interested in what they are doing. Additionally, those students who are immersed in their academics minimize displacing or competing activities (such as time spent with their families) (Brint et al., 2012). When students are surrounded by opportunities to better themselves, they will tend to be higher in engagement (Astin, 1984). Those who practice bad educational practices are commuting students (Astin, 1984), part time students, first generation students, male students, native students (as opposed to international), and students

attending research universities (Brint, Cantwell, & Hanneman, 2008). These groups of students have different goals and expectations compared to other student groups.

Academic engagement research has also demonstrated that students who are involved in their academic communities may have positive academic outcomes. Zhao and Kuh (2004) emphasize the lasting role learning communities can play on student engagement and consequently performance outcomes. Learning communities are formed when students seek out faculty (or instructors) to discuss class topics and ask questions. The relation between student engagement and grades is often mediated by integration of knowledge into conversations and activities with peers (Zhao & Kuh, 2004). These benefits also exist when students discuss these topics with other students from the same class, and when students discuss class topics with other peers or adults (Zhao et al., 2004). Generally, the positive social relationships students develop with their classmates and their instructors have positive effects on academic performance in university students (Zhao & Kuh, 2004; Witkow, O'Neel, & Fuligni, 2012), and it increases motivation in middle school and high school student populations (e.g., Altermatt & Pomerantz, 2003; Wentzel, McNamara-Barry, & Caldwell, 2004). Therefore, developing social networks and collaborating with peers is beneficial to academic outcomes. However, the academic engagement literature does not thoroughly examine other domains of the social experience university students may have. Post-secondary education is a multi faceted experience, and when students experience it fully, it can equip them with more than just academic competencies. Therefore, students' social engagement beyond the classroom

and the learning context should be studied in its own right along with academic engagement.

The need to know more about engaging students and help them persist has become more pronounced as the university population is changing. The students who are entering postsecondary schooling are more and more very different than the "traditional" ones. Non- traditional students are generally considered those who do not enroll immediately after high school, they are part time students, financially independent from their parents, single parents, students who have dependents other than a spouse, those who work full time while enrolled, or students who have completed a non- traditional high school diploma (e.g., GED) (Horn & Carroll, 1996). Students' goals and expectations for their education are changing, and for some a university education is becoming more of a means to acquire the skills needed for specific careers rather than just a well- rounded and broad education especially since the job market economy has been changing in recent years. Health care and social assistance had the largest increase in employment with Professional, scientific, and technical services employment seeing a large increase as well. While manufacturing jobs had the largest employment decrease (U.S. Census Bureau, 2014). There is a higher demand on the job market for people who are more educated and have specialized technical skills as opposed to manufacturing jobs.

Moreover, many campuses are becoming more ethnically diverse as more ethnic minorities are starting to enroll. Ethnic minority enrolled students has almost doubled since 2000, and in 2013 about 40% of students enrolled were ethnic minorities (National

Center for Education Statistics, 2014). Many of those students are first generation students who are already academically disadvantaged even before they enter college (Terenzini, Springer, Yaeger, Pascarella, & Nora, 1996; Roderick, Coca, & Nagaoka, 2011), and they have higher attrition rates than other students (Ishitani, 2003). A few reasons for this is they have less informational support from their families about the college application and university process (York- Anderson and Bowman 1991) which often means they are less able to integrate academically and socially to college life compared to students whose parents' finished college (Nunez & Cuccaro- Alamin, 1998). Additionally, about 40% of students enrolled in a four- year program do not graduate (U.S. Department of Education, 2017), and many of these students are non- traditional students. Many of these students are coming in with less knowledge, lower test scores, less informational support from their family, less knowledge about how to navigate the academic and social experience of university, less confidence, and lower critical thinking skills. Racial, ethnic, and economic status disparities account for a portion of why students do not persist in university, and most of these differences are due to gaps in knowledge, information, and students' feelings of confidence and belonging (Terenzini, Springer, Yaeger, Pascarella, & Nora, 1996). Generally, these students have to work harder to compensate for these disparities.

When students do not complete their education, there can more consequences for the student and institutions beyond inability to fill the job market demands. When students do not graduate they often accumulate debt that their current work prospects and life situations might not be enough to cover. The average amount of loans students who

are enrolled in a four year university accrue per year is 7000 (National Center for Education Statistics, 2016), and this may also be an added burden to their families. When students do not graduate it may also have negative effects on their self- esteem (Covington, 1998; Covington & Dray, 2002). Low graduation rates also harm the universities themselves, and universities have many incentives to make sure their students persist and finish. The federal Higher Education Act requires universities to disclose graduation rates as a means to protect consumers, and there are certain provisions for universities to meet certain minimum graduation rate criteria to be able to receive federal funding. Rules on gainful employment and borrower- defense were built in to protect student consumers and those are contingent on graduation rates as well as employment prospects, and cost to salary ratios (U.S. House of Representatives, 2013) (though the later two rules may be removed under the current administration (Kreighbaum, 2017)). All of these changes in student demographics as well as changes in job market demands over the last several years have created a different kind of student, and it has forced universities to reexamine their recruitment and retention practices.

University students must be motivated to complete a variety of tasks or achieve a multitude of goals that are academically, socially, and generally life- skill- building oriented, and universities are primarily tasked with motivating students to persist and finish. One of the ways they seek to accomplish this is by creating programs to get students engaged with learning, engaged with their instructors and classmates, and with the university experience in general. Knowing more about what motivates students (their goals, expectations, and motives for being in university) may help universities help

students increase their motivation through promoting those behaviors that students can control and change (Pintrich 2004, Duncan & McKeachie, 2005; Richardson, Abraham, & Bond, 2012). If students are motivated to work harder to bridge those gaps, and if institutions help them build a community on campus, student persistence can increase. Students with differing needs for autonomy, competence, and relatedness will exhibit differing levels of engagement in their academics (Connell & Wellborn, 1991). The experience can be more efficient by motivating individual students differently and by having students do those activities that motive them most, that will help them become more engaged in turn, and, subsequently will lead them to persist, learn more, and learn faster.

If motivation is an important quality for students, then engagement can be an important motivator for individual students to keep pursuing their academic and life goals (Pintrich, 2003; Fredricks, Blumenfeld & Paris, 2004). Student academic and social engagement can motivate students to persist. The work in this dissertation aims to add knowledge to how students are engaged, and it aims to determine if there are individual differences that may predict increases in students' engagement to their university experience. The purpose of the first part of this dissertation is to discuss the development of and introduce a new measure of students' social engagement to their university life beyond learning contexts. In the second part of this dissertation the relation between academic engagement and social engagement, and student individual differences will more closely be examined. Finally, whether changes occur to students' academic and social engagement and whether those changes can be predicted by important individual

differences like students' personality traits and their daily activities will also be examined.

## Developing a Measure of Social Engagement (Part 1)

University students often have different social experiences than other student populations. They are often taken out of their existing social networks at home, and put into new ones but the need to develop these networks exists. They often seek out means to increase social engagement, to meet new friends, and keep in touch with them (Madge et al., 2009). Social engagement is defined as a commitment to adult roles in work, community, and family (Lodi- Smith & Roberts, 2007). It is often studied in the context of adults in the workplace (Kim, Shin, & Swanger, 2009), and most prolifically, to assess cognitive decline, dementia, and depression outcomes in older adult populations (see Zunzunegui, Alvarado, Del Ser & Otero, 2003; Saczynski, Pfeifer, Masaki, Korf, Laurin, White & Launer, 2006; Glass, De Leon, Bassuk & Berkman, 2006). Generally, lower levels of social engagement in either of these contexts are related to negative life outcomes. Social engagement has been identified as an important predictor for primary and secondary level student populations as well. For middle school student populations having positive prosocial goals predicts better acceptance from other students (Wentzel, 1994), students with high levels of prosocial responsibility tend to be higher achieving students with more prosocial behaviors (Wentzel 1993, 1994). In high school students social engagement in non- structured activities with their peers often leads to negative outcomes on their grades and to other health compromising behaviors, such as suicidal ideation and substance use (Carter et al., 2007; Ramey et al., 2010). In the context of post

secondary schooling, social engagement is mostly measured within the classroom setting often neglecting things like social outings and hangouts that may be equally important for university students' success. The purpose of part 1 is to create a measure to assess university students' positive social engagement behaviors outside of the learning context.

Feeling that students have friends with which to socialize outside the classroom, and with whom they may have meaningful connections may be beneficial for students to persist in their education no matter how well or poorly they are performing. Research on the construct for student populations has found that the positive social relationships students develop with their classmates and their instructors have a positive effect on academic performance (Witkow, O'Neel, & Fuligni, 2012; Madge et al., 2009). Though most previous studies on engagement, including those that study university students, they measure social engagement within the academic context, e.g., study groups, contact with faculty. However, they often do not include social engagement that occurs on or around campus usually with other students in a non- academic contexts, for example, social gatherings, and conversations over meals, etc. This research is more rare for university student populations, and they indicate that this might be a complex topic. Studies have shown that students in various major fields of study have differing opportunities for engagement. That is, students in the humanities and social sciences tend to have less intense and less demanding curricula, and these students are socialized into collaborating with other students with the intent to discuss and develop ideas (Brint et al., 2010, Brint et al., 2012). On the other hand, students in the field of engineering or the other sciences emphasize working with their classmates to help develop their quantitative skills, and

these students tend to have little time to devote to other activities (Brint et al., 2008). Therefore, the former may be able to become involved in activities that could help them become more engaged (such as clubs and organizations), and, in turn, their grades and performance might improve, whereas the latter might have to study a few hours extra to be able to maintain high grades (Brint et al., 2012). When people build social networks they are more likely to have more social support (in the form of emotional and practical support), and they are more likely to be more involved in doing tasks associated with those networks. This is why it is very important to study this important social engagement domain, one outside of the learning context. Social engagement is a part of the general quality of student life and may influence student performance.

When university students' engagement is examined in the literature, it has traditionally been measured with assessment tools such as the National Survey of Student Engagement (NSSE; Kuh, 2001), the First Year Experience Questionnaire (FYEQ, McInnis, James & McNaugh, 1995; McInnis, James & Hartley, 2000), and the University of California Undergraduate Experience Survey (UCUES; University of California, 2017). These measures to varying degrees focus mostly on the academic experience undergraduate students have. That is, how well they are satisfied with their university environment and their academics, their interactions with faculty and staff, and various social aspects of the university experience. Though these measures are useful tools for assessing the many facets of academic engagement, they do not simply, specifically, nor systematically measure positive social engagement behaviors outside of the classroom and the learning context.

The NSSE is comprised of *benchmarks* or subfactors that assess various types of engagement (Kuh, 2003). The closest benchmark assessesing non- learning context social activities is the *enriching educational experiences* benchmark. This includes items that ask students about diverse interactions, participation in internships, and co- curricular activities. However, this measure does not assess other important social activities in which students might engage, such as friendly interactions and gatherings with other students and friends. Similarly, the FYEQ is a measure constructed to assess the experiences incoming students have. Like the NSSE, it is comprised of engagement subfactors. The subfactors that can be considered as the most conceptually closest to the domain of social engagement outside the learning context discussed here are *peer engagement* and *beyond- class engagement.* The first subfactor asks students about their peer experiences within the classroom setting. The second asks students about their extracurricular activities beyond the class, namely, it asks about having friendships on campus. This subfactor is very useful in assessing social engagement in a non- learning context, and it contributes to knowledge in the social engagement domain but it is not the main focus of the measure. Finally, the UCUES has a social engagement set of items throughout the survey, and most are within Module 3 titled *Civil Engagement*. Here students are asked to select from a set range of how many hours in a week they participate in activities not related to studying or attending classes. Such activities are entertainment, service and volunteer, exercise, clubs and organizations, creating interests, socializing, partying, spending time with friends, using the computer for non- academic related activities, and watching television. While this information is very relevant to

social engagement outside of the learning context, the module is embedded within in a long survey the focus of which is mostly students' academic habits.

When social engagement is examined outside of the learning context, it is mostly a peripheral focus instead of an important construct with implications for the students. There is a call to develop more domain specific measures in the engagement literature (Fredricks, Blumenfeld & Paris, 2004). With a more pointed measure of social engagement research can focus on examining variables that can predict social engagement and how it changes in ways that students can benefit most. Therefore, there is a need to measure social engagement for university students outside of a learning context, one that is concise, user friendly, and one that uses the same response metric as academic engagement so they can be compared. The current study aims to develop such a measure.

**Correlates of Social Engagement**

To further explore the relation between the social engagement measure, individual differences variables are examined, including measures of well- being, satisfaction with the university, perceived stress, and academic engagement. Also, included are daily activities and personality traits as there is research suggesting there might be a complex relations between those and social engagement, and it would be interesting to further explore these relations.

**Daily activities.** Daily activities may be important in determining whether and how students are engaging, coping or adapting to this important period in their life. The U.S. Bureau of Labor Statistics (2015) publishes data on students' activities in an entire

day; however, these data only generally include social type activities in the *leisure* and *sports* categories. They lack a more detailed breakdown of students' social activities. Generally, the literature on daily activities and university students neglects social activities outside the learning context, and how those might relate to social engagement and other important correlates. This work will look at more of those activities.

**Personality.** Personality traits are a consequential predictor of life outcomes (Ozer & Benet- Martinez, 2006), and the Big five personality traits have very frequently been used in academic engagement research. There is some literature on social engagement and personality in a university sample, and the results are mixed due to measurement differences. A characteristic study examined the personality of university students who attended class and found students tended to be higher in extraversion, openness to experience, and emotional stability compared to students who opted to participate in web- based instructional environments (Caspi, Chajut, Saporta, & Beyth-Marom, 2006). Extraversion and agreeableness are traits related most to interpersonal characteristics (John et al., 1999), and students who reported positive interactions with the university tended to perceive and show increases in agreeableness (Robins, Noftle, Trzesniewski, & Roberts, 2005).

## Method

### Development of the Social Engagement Measure

The previously discussed student engagement measures were reviewed (i.e., UCUES, FYEQ, NSSE). Attention was given to items matching the study's social engagement definition, which was "the positive social behaviors undergraduate students

may engage in with one or more other undergraduate students or friends on or around campus." Relevant social behavior items were parsed out, and a list was created. The list was presented to a focus group of graduate students and undergraduate students. The instructions for the group were to assess which items seem most relevant and unique for undergraduate students, and which items fit the social engagement definition. The items were discussed, some were deleted, some added, and some amended. The product was an 11- item scale. (After analyses, an item was removed because was not correlated to the corrected total score. See results section and discussion for more details.) Participants are prompted to respond to how often they participate in the social activities and can reply on a scale that ranges from 1- *never* to 6- *very often*. An almost identical prompt was used as for the academic engagement measure in order to make the two measures comparable and consistent. See Appendix A for the complete measure.

**Participants**

Participants were 617 UCR undergraduate students from the psychology subject pool. Fifty six participants who did not complete all items of the social engagement measure were not included in these analyses. The mean age was 19.57 and they were mostly females ($n$ = 468). The sample was primarily Asian American ($n$ = 51.1%) and Hispanic ($n$ = 32.1%). The rest of the sample was African American, Caucasian, and other or mixed ($n$ = 3%, $n$ = 12.4, $n$ = 1.4%). There was an almost even distribution of students in year of study with the majority in their second year ($n$ = 34.5%), and the minority in their fourth year ($n$ = 10%), and the rest in their first year ($n$ = 29.8%) and

third year (*n* = 25%). The participants completed an online survey about their activities and personality, and received research credit as compensation.

**Measures**

Various measures are included as criteria against which to compare the social engagement measure. These are discussed below.

**Demographic information form**. This is an 8- item questionnaire on general demographic information similar to a census survey, such as their age, sex, major, year at UCR, and ethnicity (Appendix B). Subjects will also be asked here for their UCR grade point average and their ACT/SAT score.

**Daily activities measure**. This is a 6- part survey about experiences participants have in a day (Appendix C). This measure is adapted from Hershey's dissertation (1999). The first part of the survey asks for a brief written description of the subjects' activities for every hour in a twenty- hour day (from 7am until 3am) beginning from when they wake up until they go to bed. The second part asks them to classify the activity within one of eighteen broad categories, such as "in class," "studying," and "activity with friend" (see Appendix C for the complete list). Part three asks participants to disclose generally with whom they were during those hours, for example "with a friend," "a classmate," etc. Part four asks where they were generally, e.g., "campus," "home," etc. In part five subjects selected how much they enjoyed the activities from a three point scale, 1- *it was not enjoyable*, 2- *it was somewhat enjoyable*, and 3- *it was very enjoyable*. In the final part, participants answer how often they typically engage in the activities

they listed. They rate this on a 5- point scale ranging from 1- *rarely* to 5- *very often (daily)*.

**Big five inventory- 44 (BFI-44)**. Subjects completed the 44- item scale based on the prototypical markers of the Big Five factors of personality (John & Srivastava, 1999) (Appendix D). The alpha (Cronbach's) reliabilities were calculated for Openness ($\alpha$ = .721), Extraversion ($\alpha$ = .829), Neuroticism ($\alpha$ = .786), Agreeableness ($\alpha$ = .744), and Conscientiousness ($\alpha$ = .781).

**Academic engagement scale.** This is a 24- item scale measuring the academically oriented activities in which students engage (Appendix E). This measure asks students how often they interact with faculty and classmates and how often they perform studious related activities. The measure is a composite of items adapted from the CORE module question subsets 5-8 of the University of California Undergraduate Experience Survey (UCUES; University of California, 2017). Subjects rated how frequently they engaged in the activities on a scale ranging from 1- *never* to 6- *very often*. The questionnaire was also modified to include additional items developed in a focus group, and they were added to measure participants' continued interest in academic subjects. The measure had high internal consistency (Cronbach's $\alpha$ = .899).

**Attitudes toward UCR.** Subjects completed a 22- item scale that measures how students perceive UCR and its services for students (Kaiser, 1996). Questions about satisfaction with various UCR services and the Riverside community were added to determine how well students were satisfied with UCR, and how connected they feel to the community surrounding UCR. Subjects rated how much they agree with the

statements on a 5 point scale ranging from "disagree strongly" to "agree strongly" with a "neither agree nor disagree" option in the middle. Lastly, participants were asked overall how satisfied they were with UCR. Only this last item was used in this paper.

**Satisfaction with life scale (SWLS).** Participants completed a 5-item scale measuring global life satisfaction which has been found to be correlated with subjective well- being (Diener, Emmons, Larsen & Griffin, 1985) ($\alpha$ = .875).

**Perceived stress scale (PSS).** Participants also completed a 4- item scale about their feelings and thoughts about control and personal problems during the past month (Cohen, Kamarck, & Mermelstein, 1983) ($\alpha$ = .742).

**Single item academic engagement and single item social engagement.** Finally, a sub- sample of participants were administered a single item about how engaged they feel they were with their academics and with their social life on campus high. Those single items read "How engaged do you think you are with your academics?" and "How engaged do you think you are with the social aspects of university?"

## Results

### Social Engagement Measure Reliability and Validity

The social engagement measure had high internal consistency ($\alpha$ = .840). Table 1 illustrates what the alpha coefficient would have been if each item were deleted one at a time. Of note is item 8 ("Have trouble finding a good place to hang out with friends at UCR."), which correlated poorly to the corrected item total score (Table 1). There are two possible explanations for item 8 being incongruent to the rest of the items and the measure in general. First, this might be because of the content of the item. That is, item 8

asks about difficulty in finding locations to socialize and not about socializing behaviors whereas the other items ask about socializing behaviors. Second, this item might be performing poorly because it is a reverse scored item, and those have often been found to have weaker relations to the rest of the scale items (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). The poor performance of item 8 is most likely a combination of the two reasons offered above. It was removed from the measure for future analyses in this part and part 2.

**Correlates of social engagement**

To get a better understanding on how social engagement relates to important variables that have been related to academics and engagement in other research, the social engagement mean score was correlated to such variables (Table 2). Social engagement correlated highly to academic engagement. This was not a surprise as the academic engagement measure also comprises of social behaviors within the learning context.

## Discussion

The current research examined students' social engagement with a new measure of positive social behaviors, and social engagement was examined in relation to other important variables. Previous studies have measured social engagement as a component of academic engagement using items that ask about student relations with their classmates and their instructors within the learning context, and their willingness to interact with diverse others (Brint et al., 2008, 2010; Witkow et al., 2012) but lacks in measuring social engagement outside this learning context.

The purpose of the development of this new measure was to create a set of items that ask participants how frequently they engage in activities with their university peers in social contexts on campus or around campus. As discussed above, though such measurement tools may already exist in one form or another, the current measure was developed to be free standing, short, inclusive of only socializing behaviors, and with simple response set options. This measure has high internal consistency in the sample it was tested on though a reverse item (item 8) correlated very poorly to the total measure score and the other items within. After further review, it was determined this item may be testing something different (i.e., ability to find places to socialize as opposed to actual socializing behaviors), and it was removed from the measure and from any subsequent analyses.

When correlated to other constructs, social engagement was related to extraversion and agreeableness both considered interpersonal traits (John et al., 1999). Agreeableness and extraversion have also been linked to engagement in the workplace (Lodi- Smith et al., 2007). Also, previous research has shown social inhibition (which could be considered as the reverse of social engagement) is related to inverse extraversion (Denollet, 2005). In this study, social engagement was related to openness to experience and the inverse of neuroticism, two traits that other studies have found to be distinct traits of students who choose to attend lectures in person (Caspi et al., 2006), and these findings are consistent with traits associated with investment in the workplace (Roberts, 2006).

## Limitations

A limitation of this study is this measure could not be validated with a sample from a different student population. Though the sample used is ethnically diverse, and we sampled almost equally across all years of study, our sample consists primarily of students in a university on the west coast known for having many ethnic minority and first generation undergraduate students, and those students are often considered to be different than other student populations (Pike & Kuh, 2005). Also, research has suggested there may be important individual differences between students across different campuses (Corker, Donnellan, Kim, Schwartz, & Zamboanga, 2015). Future work could validate this social engagement scale with other student populations.

## Academic and Social Engagement: A Longitudinal Examination (Part 2)

The university experience spans across a time when many changes may occur to individuals in that experience. For example, students may change their interests, friends, majors, or careers, and they generally mature. Social Investment theory (Roberts, Wood, & Lodi- Smith, 2005) suggests investment in or engagement with social experiences can be so powerful as to change one's personality to accommodate these new social roles. Though intense academic engagement has been found to have the opposite effect on change (Astin, 1984). For both traditional and non- traditional students these social roles may be the student becoming more independent from her parents and learning to navigate social and academic environments different from those in high school. These social roles might include preparations to starting a career or changing to a new career, and starting a family. Regardless, they exist across all cultures, and people assume the expectations and

goals for each of these social roles (Roberts et al., 2005). Therefore, getting students to successfully meet these expectations and goals may help them get through the university process more successfully. Changing the relevant behaviors and cognitions may be easier to do in order to get students more motivated. As opposed to changing students' life circumstances that have brought them to an academic disadvantage to begin with. If engagement is used as a motivator for students to persist in their postsecondary education, then it is important for changes in engagement to be explored more. The work in part 2 seeks to explore whether those changes in engagement can be predicted by university students' personality and daily activities.

Changes in academic and social engagement have often been examined in younger students (non- university students). Ryan and Patrick (2001) examined changes in social engagement in middle school students, assessed with self –regulated learning and disruptiveness, and they found these were influenced by how the teaching environment was structured (e.g., respectful other students and common work) and by the students' perceptions of how much the teacher cares. The same study also showed collaborative encouragement and perceptions of teacher confidence in students increased student engagement. Additionally, middle school students who socialize with highly engaged peers tend to be highly engaged or even show increases in engagement across time, and students who socialize with less engaged groups showed decreases in engagement (Kindermann, 2007). Changes in engagement from high school to university may also occur. High school students are less engaged than college students (Martin, 2009). However, changes in university students' engagement has been infrequently

examined in the literature, and when it has happened, it has mostly been examined cross sectionally. What we know about this from the literature is students in later study phases are more mastery oriented than students in their first or second academic year. Younger students, in contrast, may value the social experience more highly and adapt a work-avoidance orientation (Roebken, 2007). Engagement may also have effects on the individual beyond university. Some work has suggested that increased effort in academics has been related to increased effort in the workplace later in life (Bauer et al., 2003). Therefore, one might expect changes both in academic and social engagement across students' university career.

**Predictors of Academic and Social Engagement**

Academic and social engagement can vary between individuals, and in this part academic and social engagement are examined in relation to the individual differences of daily activities and personality.

**Daily activities.** Some studies have examined the time students spend with their families and friends. Students with certain cultural backgrounds find it harder to balance studying and time with their friends as opposed to studying and spending time with their families (Fuligni, Yip, & Tseng, 2002) but the former tend to do better in their academics (Kuh, 2003). The US Bureau of Statistics (2015) publishes data on *students' activities* in an entire day. These data lack other or detailed information about students' lives, and they restrict the ability to get a complete picture of students' life. Most research on students' daily activities centers around the important student activities, such as class attendance, studying, time working, time spent with family and friends. One of the most

important variables researched in university student time use has understandably been the time students devote to studying. Research has shown study time can be important in how well students will do in their academics (increases in study time have been related to increases in GPA (Stinebrickner & Stinebrickner, 2004). Generally, students study on average about 27 hours per week (Babcock & Marks, 2011), and studying time has reduced from about 40 hours per week in the 1960s to about 27 hours in the early 2000s (Babcock & Marks, 2011). The researchers concluded that this might have occurred because students are spending more time in leisure activities and universities have changed certain aspects of operation to accommodate students. Students spend more time on leisure activities than studying and time working for pay (Kuh, 2003), and more students are working for pay than in previous generations (Babcock & Marks, 2010). Some students more often may see a university degree as a means to better their chances in the job market (Brint & Cantwell, 2012), and for the "signal" it sends future employers (Babcock & Marks, 2010). Therefore, they may not be required to study to get maximum performance outcomes because having the degree is the end (as opposed to getting good grades) compared to students in previous generations. There are many variables to contribute to how student daily activities may change their engagement. Therefore, examining time spent studying and doing other academically related activities may no longer be enough to assess student engagement.

Engaging in various activities may have a different effect on students' academic and social engagement mostly as an effect of environment of study, culture, and displacing activities. Activating uses of time, which are activities that students actively

(as opposed to passively) do things, such as exercising or volunteering as opposed to watching television or relaxing, are associated with increases in academic conscientiousness but not directly with high GPA (Brint & Cantwell, 2010). However, the relation between activities and engagement can be complex. Even when students are engaged in academically related activities (connecting activities), it does not necessarily guarantee they will increase their academic conscientiousness. Some "connecting" uses of time, such as participating in clubs, do not appear to support academic success especially when they distract the student from doing academic work. Inversely, some "separating" uses of time, such as spending time with family, have been shown to support academic success in some cases (e.g., if the family supports academic engagement) (Brint & Cantwell, 2010). Earlier engagement "culture" was discussed, thus, different areas of focus and academic cultures students have can play an important role in how students will become engaged, and what types of engagement are more important or more valued. Engaging students in various components of the university experience is beneficial, and education can be made more efficient by encouraging students to partake in those activities that will help each student become more engaged.

**Personality.** Personality has been used to predict important and consequential life outcomes such as subjective well- being, longevity, relationships, and occupational performance (Ozer & Benet- Martinez, 2006). Important life outcomes are also university performance and success. As such, there have been many studies looking at the relation between academic achievement and personality, and how personality can predict academic success. Generally, academic performance has been correlated to all five

personality traits depending on the outcome measures used. Conscientiousness often strongly emerges as a predictor of academic performance (see Lounsbury, Sundstrom, Loveland, & Gibson, 2003; Preckel, Holling, & Vock, 2006). Many researchers believe this effect is mediated by academic effort (Trautwein, Lüdtke, Roberts, Schnyder, & Niggli, 2009; De Raad & Schouwenburg, 1996; Bauer & Liang, 2003). That is, highly conscientious people tend to also put more effort into their academics and this drives them to persist and succeed more than their cognitive abilities (Noftle & Robins, 2007). In a meta- analysis by Poropat (2009), beyond conscientiousness, academic performance is shown to consistently relate to agreeableness, and inverse neuroticism, and students low on neuroticism tend to focus efforts on academics more (Bauer & Liang, 2003). If effort is an important characteristic of academic success, then examining student effort behaviors more closely as they relate to personality characteristics may help students. This can be done using academic and social engagement outcomes.

Engagement is a consequential outcome, and as such it has been examined in the workplace. Studies have shown employees high on conscientiousness and low on neuroticism tend to be more engaged, and this often has many positive job and life outcomes (Kim, Shin, & Swanger, 2009). Assessing the relation between academic and social engagement to personality can also offer useful information about students' ability to engage with, adapt to, and navigate through the university life. At the university level, researchers have often examined proxy, single behaviors as measures of engagement, such as attendance, and voluntary absence. Those behaviors are often negatively related to conscientiousness (Conrad, 2006), and they predict college drop out (Tross, Harper,

Osher, & Kneidinger, 2000). Additionally, Farsides & Woodweld (2003) found self reported absence was negatively related to conscientiousness, and tutor reported absence was correlated negatively to conscientiousness and agreeableness. students high on conscientiousness (and low on neuroticism) tend to value academics more- thus, engage in academically oriented activities more often (Bauer et al., 2003). Conscientiousness has been described as being related with active engagement with tasks, extraversion with social related tasks, and openness with engagement with ideas (Ashton & Lee, 2001). There is even less information on social engagement, university students, and personality. When entering university, students with high extraversion tend to socialize with other students more (Bauer et al., 2003). There is need to systematically examine academic and social engagement using more specialized and complete measures of the two constructs beyond single, proxy items.

**Research Questions**

The general aim of this research is to obtain more information about academic and social engagement by using complete, specialized, multi- item measures for each. Students' daily activities and their personality will be used to examine relations to academic and social engagement. The main research aim is to answer whether students' academic and social engagement change, whether students' daily activities and personality at baseline can predict any observed changes, and whether those changes are the same for all students.

## Method

### Participants

The participants in this part (Part 2) are the same as those described in the scale development part of this dissertation (Part 1). See Table 3 for participant frequencies for ethnicity, year of study (years at UCR), and sex across the three time points. There was significant attrition between all time points, and in many analyses between the three time points, the sample sizes reduce even more ($n_{T1xT2xT3}$ = 37, $n_{T1xT2}$ = 187, $n_{T2xT3}$ = 37, $n_{T1xT3}$ = 94). Independent t- test analyses were performed to measure whether there were differences between those participants who did not persist to T3. The results indicate that T1 participants who persisted to T3 were not significantly different in either engagement type nor any of the five traits compared to T1 participants who did not eventually complete the T3 surveys. Similarly, T2 participants who persisted to T3 were not significantly different in any of the variables of comparison to T2 participants who dropped out before participating at T3.(See Table 4 for details). Therefore, attrition was not systematic for academic and social engagement and the big five traits.

### Procedures

Data were collected entirely online as a three part longitudinal study. Participants completed a set of measures over three separate occasions. Time one (T1) data were collected in the beginning of the quarter in which data collection started ($n$ = 673, $m_{age}$ = 19.63, $SD$ = 2.34), time two (T2) at the end of the same quarter ($n$ = 191, $m_{age}$ = 19.81, $SD$ = 2.51), and time three (T3) toward the end of the immediately subsequent quarter ($n$ = 97, $m_{age}$ = 19.34, $SD$ = 2.27). All data were collected across multiple waves.

Participants received one research credit each for participating in times one and two. Participants were given the option to receive one research credit or a monetary incentive to complete time three surveys.

**Measures**

All the same measures were used here as for Part 1. See Table 5 for the reliability coefficients for the academic and social engagement, as well as the five personality traits through all time points.

## Results

First, omnibus ANOVA test comparing four ethnic groups were done to determine whether there were academic and social engagement mean differences at T1. Only these four groups were selected because the sample size was large enough for comparisons. The means and standard deviations are reported in Table 6. There were small statistically significant differences for the ethnicities for both academic engagement ($F\ (3, 596) = 4.939, p = .002$) and social engagement ($F\ (3, 591) = 3.512, p = .015$). Tukey's HSD post hoc tests were done to determine the statistically significant mean differences pair- wise. The Asian American group was significantly less academically engaged than the white group, and more socially engaged than the Hispanic/ Latino group.

Next, various correlations between academic and social engagement and daily activates and personality are presented to help better understand these relations. Second, academic and social engagement change is examined in a few different ways. Paired t-tests were performed to preliminarily evaluate if there are any changes within participants

in academic and social engagement across all the time point pairs. Cross- section differences in engagement between students in varying years of study are also discussed here. Regression models of change with the mediating daily activities and personality variables are also presented in this section. Finally, multilevel growth models were used to predict change across all time points, and select daily activities and traits were also included in the models.

**Academic and Social Engagement Correlations**

In Table 7, academic and social engagement are correlated to each other across the three time points. Briefly, academic and social engagement are correlated to each other for the same time point and across time points. This is may be because the academic and social engagement measures are assessing how involved students are with their academics and their social life, respectively. The academic engagement measure includes questions that ask about students' social engagement to their academics (e.g., how often they collaborate with other students, they seek out faculty when they have questions).

In Table 8, the academic and social engagement scores across the three time points were correlated to the single item engagement questions collected during a single time point. All correlations between the single item academic and social engagement and the academic and social engagement scale scores are strong enough to infer they are measuring similar constructs, respectively. The engagement measures are measuring engagement as a wider construct than the single item engagement questions are since they have more items. When correlated to each other, the academic and social

engagement single items are statistically significantly correlated ($r$ = .364, $p$ = .000, $n$ = 125). Finally, the single item for academic engagement is highly correlated to the social engagement scale score, and a possible explanation could be when asked the single item of how academically engaged they are, participants consider all academic and social activities and involvement when answering. However, when asked how socially engaged they are, participants might not be considering participation in academically oriented activities with their peers and faculty.

Finally, academic and social engagement were correlated to students' year at UCR to get a better understanding of whether there are differences in each engagement style across students in different years of study at UCR. Previous research suggests that university students in their later years of study are more mastery oriented and their academic engagement is higher than younger university students. Academic engagement was not statistically significantly correlated to year at UCR across all times ($r_{T1}$ = -.009, $p_{T1}$= .813, $n_{T1}$ = 636; $r_{T2}$ = .069, $p_{T2}$ = .341, $n_{T2}$ = 191; $r_{T3}$= -.062, $p_{T3}$ = .550, $n_{T3}$ = 96). Previous research suggests university students in their early years of study are more interested in the social experience of university than old students and are more socially engaged. Social engagement was only correlated to year at UCR in T3 data ($r_{T1}$= -.073, $p_{T1}$ = .066, $n_{T1}$ = 629; $r_{T2}$ = -.016, $p_{T2}$ = .824, $n_{T2}$ = 191; $r_{T3}$ = -.263, $p_{T3}$ = .010, $n_{T3}$ = 96).

**Personality.** Correlations between the personality traits across the time points are presented in Table 9. When each of the traits is correlated to the same trait across time

points, the correlation coefficient is medium to high strength indicating high trait stability across time.

In order to obtain more information on the relations between the engagement measures and personality, academic and social engagement across all three time points were correlated to the traits at each time point (see Table 10). Most relations are stable for strength and direction across the time points with a few exceptions. Conscientiousness is consistently related to academic engagement. Extraversion is most consistently and most strongly related to both types of engagement across all time points, and this could be simply because both academic and social engagement measures include items that ask about involvement with others/ socializing.

**Daily activities.** The mean proportions of time spend on each activity per time point were calculated, and these results were entered in three pie charts. Figures 1, 2, and 3 depict the mean proportion of daily activities students engage in during T1, T2, and T3 respectively. The mean time spent on each activity across the three time points is fairly stable for this sample. See Appendix F for daily activity correlations within the same time point.

To examine the relations between daily activities across the time points a little more extensively, in Table 11 the daily activities from each time point are correlated to the daily activities from the other two time points. These tables may help with our understanding of how consistent activities may be across the three time points. It can be expected that most activities reported in T1 and T2 would be consistently related across as these were collected within the same quarter, and students' schedules might tend to be

more consistent within a single quarter. Here studying, sleeping, relaxing, travelling, working, exercising, doing activities with family, and doing housework were somewhat consistently correlated across the pairs of correlations.

**Engagement, daily activities, and personality**. In Tables 12, 13, and 14 daily activities, engagement, and traits are correlated across the three time points. These variables were correlated in order to further examine these relations, and the statistically significantly correlated variables from T1 are used in the regression and multi- level models that follow.

**Regression Models**

Regression analyses were performed to predict later time point academic and social engagement with academic and social engagement from the previous time points in the models, respectively, to assess change. Also included in these regression models were the five personality traits, and the daily activities from T1 that were statistically significantly correlated to each of the engagement types at T1. It should be noted again the sample sizes are very small for many of these models, and any results are tenuous and should be interpreted with caution.

It is assumed both traits and activities at T1, compared to T2 and T3 observations, are stable enough and have a high enough sample size to better predict each type of engagement (see Appendix G for regression models with daily activities from previous time points). Tables 15 and 16 show these regression analysis predicting academic and social engagement at later time points from personality traits at T1, and those daily activities from T1 that were statistically significantly correlated to T1 academic and

social engagement, respectively. The strongest independent predictor of academic engagement was academic engagement at the previous time point in all three academic engagement models. Similarly, the strongest independent predictor of social engagement was the previous time point social engagement.

**Linear Growth Models**

In order to explore individual change in academic and social engagement over the course of three time points and to study systematic variation in growth trajectories and the individual differences that may predict these, a multi- level linear growth model (LGM) was used for each of the two outcomes. Time was entered into the equation at the first level. Personality traits were assumed to be stable (see Appendix H for trait paired sample t- tests and a short discussion) and were entered as level two variables, along with students' daily activities. To construct the best fitting conditional model, generally, all trait and all daily activity variables that were statistically significantly correlated to academic and social engagement at T1 were initially entered in the model (Table 12). An exception is the variable time spent doing housework that was entered in the model that predicts social engagement. This exception was made because this activity was one of the more stable ones across time points (T1 to T2, see Table 10). Time spent on housework explained variance for social engagement but not for academic engagement. When a predictor variable did not statistically significantly contribute to explaining variance in each model, that variable was removed from the model. The variables that remained are the ones that were included in the best fitting model.

A LGM design was selected for a few reasons. First, time (change) was included in the model. Second, participants were used for whom we have missing data (i.e., missing one or two time points). Third, inter- individual and intra- individual changes in both types of engagement can be accounted for with this type of model. Fourth, it allows for a better examination of the rate of growth of engagement (though limited to modeling a line and not a curve with the three time points). Finally, LGM allows for control of background characteristic variables.

**Academic engagement.** Multilevel modeling statistical techniques were used in the statistical program R (package lme4) to estimate variance in intercepts and slopes for academic engagement. The outcome variable and all continuous predictor variables were grand mean centered. Below is the best fitting conditional model predicting academic engagement using relevant traits and daily activities.

(1) Level 1 Model: $\text{Academic Engagement}_{ij} = \beta_{0j} + \beta_{1j}\,(\text{Time}) + r_{ij}$

(2) Level 2 Model: $\beta_{0j} = \gamma_{00} + \gamma_{AE\,01}(\text{Extraversion}) + \gamma_{AE02}(\text{Openness}) + \gamma_{AE\,03}\,(\text{Conscientiousness}) + \gamma_{AE\,04}(\text{Study}) + \gamma_{AE05}\,(\text{Class}) + u_{0j}$

$\beta_{1j} = \gamma_{10} + \gamma_{AE11}\,(\text{Extraversion}) + \gamma_{AE12}\,(\text{Openness}) + u_{1j}$

The mixed model for academic engagement was specified as:

(3) $\text{Academic Engagement}_{ij} = \gamma_{AE\,00} + \gamma_{AE\,01}(\text{Extraversion}) + \gamma_{AE\,02}(\text{Openness}) + \gamma_{AE\,03}(\text{Conscientiousness}) + \gamma_{AE\,04}(\text{Study}) + \gamma_{AE\,05}\,(\text{Class}) + \gamma_{AE\,10}\,(\text{Time}) +$

$\gamma_{AE11}$(Extraversion)* (Time)+ $\gamma_{AE\ 12}$ (Openness)*(Time) + $u_{AE\ 0j\ +}$ $u_{AE\ 1j}$ (Time) + $r_{AE\ ij}$

The intercept was close to zero so that the baseline average academic engagement is zero for everyone. Those high in extraversion, openness to experience, conscientiousness, time attending class, and studying were statistically significantly better off in initial academic engagement status. There was no average change in academic engagement for anyone (i.e., no within participant engagement change). However, there was also a cross level interaction between time and extraversion, such that those students who started off high on extraversion tended to increase in academic engagement linearly across the three time points. Inversely, those students who were low in extraversion at T1 tended to decrease in academic engagement as time went by. This effect was a statistically significant one. Figure 4 illustrates the general direction and magnitude of this interaction. Similar to the interaction effect observed for extraversion, this relation holds for openness to experience. Specifically, those students who start off with high openness to experience at T1 tend to increase linearly in academic engagement across the three time points compared to the academic engagement grand mean. Participants who started off with low openness tended to decrease in academic engagement. This interaction effect for openness, depicted in Figure 5, was more robust than that for extraversion.

**Social engagement**. The same multilevel modeling statistical procedures were used to estimate growth models for social engagement from personality traits and daily

activity predictors. Below is the best fitting conditional model predicting social engagement change using relevant traits and daily activities.

Mixed model:

(1) Social Engagement$_{ij}$ = $\gamma_{SE\ 00}$ + $\gamma_{SE\ 01}$(Extraversion) + $\gamma_{SE\ 02}$(Openness) + $\gamma_{SE03}$(wFriends)+ $\gamma_{SE\ 04}$(Exercise)+ $\gamma_{SE\ 05}$ (Housework) + $\gamma_{SE\ 10}$ (Time) + $u_{SE0j}$ + $u_{SE1j}$ (Time) + $r_{SEij}$

Similar to academic engagement, initial social engagement differences were predicted by extraversion, openness to experience, time spent on activities with friends, exercising, and doing housework. There were not any interaction effects such that there were not any variables that predicted within participant changes in social engagement (see Table 17).

## Discussion

Both academic and social engagement are important constructs that should be examined for university students as they may have important consequences for the students and the university. A way to examine these constructs is their relation to various student individual difference characteristics, and this work examines university students' personality traits and their daily activities. It explores whether certain students and activities in which they may be involved give them an advantage to engaging academically and socially over other students and whether there are things students do that help them increase their engagement.

The current research has demonstrated students' academic and social engagement at an earlier time point are strong and consistent predictors of future academic and social

engagement, respectively, beyond traits and daily activities. These results could be an indication it is important to study student engagement earlier in the students' life to track when engagement behaviors form. Though interpretations of these results should be done with caution, these relations were observed in analyses with small sample sizes. . Additionally, though previous research has observed many academic differences between different ethnic groups, in this research, the only observed difference in engagement was for Asian Americans.

The current research found that those students high in extraversion and openness to experience start off higher in both types of engagement. Previous research has shown those who opt to attend class, tend to be higher in extraversion and openness (Caspi et al., 2006), extraversion is involvement with social tasks, and openness involvement with ideas (Ashton & Lee, 2001). The engagement items in the measures were used asked participants about these types of involvement (involvement with faculty, students, events, etc.). That is, those students who are more inclined and willing to get involved in the various academic and social tasks are higher in these traits and higher on engagement. This research also showed that those high in conscientiousness start off higher in academic engagement. Conscientiousness has consistently been associated with higher academic focus (Bauer & Liang, 2003) and better academic performance (Poropat, 2009). Conscientiousness has also been characterized as the trait of active engagement with tasks (Ashton & Lee, 2001), which is primarily what the academic engagement measure is surveying.

Moreover, the linear growth models presented here demonstrate the importance of extraversion and openness to experience on academic engagement even further. Specifically, those who start off high on extraversion and openness to experience will have an additive effect on their later academic engagement. This could be interpreted as those who are more willing to get involved with the various aspects of academia continue gaining the engagement benefits. Surprisingly, this effect does not hold true for conscientiousness. An explanation could be that those who are already actively engaged in doing academically related tasks, such as studying and attending class, may not have the same room to grow (no additive effect) because they are from the beginning already doing all they can in those domains. Whereas those high in extraversion and openness to experience are can take further advantage of the university experience, and those are actively and continuously striving to build new social networks with faculty and other students, and to explore new ideas.

Certain student activities are also important variables for predicting student engagement. Specifically, students who spend more time studying and in class were found to be higher on academic engagement. These "connecting" activities have been shown to be important ones for good academic practices (Brint & Cantwell, 2010) and outcomes (Stinebrickner & Stinebrickner, 2004). Along similar lines, students who spend time with their friends, exercise more, and do not do housework are those who are higher in social engagement. That is, students who devote their time to "connecting" and active activities with friends and to activities that most often require them to be out and among

others (i.e., exercising), and those who spend less time doing isolating, in home activities (i.e., housework) report higher social engagement.

**Limitations**

An important limitation of part 2 was the small sample sizes. Maas & Hox (2005) conclude that "a large number of groups [more than 100] appears more important than a large number of individuals per group" to estimate the variance accurately, and that a sample of 50 or less observations may lead to an inaccurate estimation of second- level (individual level observations) standard errors. Though initial observations are high in part 2 of this study, T2 and T3 observations are low sometimes reaching 35. Additionally, fitting a model with too many predictors and few degrees of freedom will tend to lead to inaccurate coefficients and positively biased model fit statistics (Babyak, 2004). For both the regression models and the growth model there are small sample sizes (in T2 and T3 especially) with many predictor variables (up to 13 predictors). These effects are more biased when analyses lack a priori hypotheses about which predictors will be included in the model (Babyak, 2004). The data in this study should be interpreted with caution. They are exploratory analyses, and more work with a higher sample size and a priori hypotheses should be developed for more sound conclusions.

Another limitation of part 2 was the large participant attrition across the time points. There were not any individual differences between those who persisted and those participants who did not complete all time points, and there were not any significant differences in academic and social engagement. The large attrition may best be attributed to the study recruitment practices. Participants were from the psychology subject pool

and were required to participate in research for that quarter. Participants in this study may have not persisted to T2 (in the same quarter as T1) because they may have fulfilled the research credit requirement at T1. Another possible reason could have been that they opted to finish their credit requirements before the end of the quarter, and T2 of this study was administered at the end of the quarter. Finally, participants may not have persisted to T3 (at the end of the following quarter) because those research requirements were not in place anymore. In future work, some procedural things can be changed in the study that might attract more participants to stay. For example, it might be helpful to shorten the length of the study, participants may be more inclined to follow- up. Additionally, doing some in- person things might help build better rapport with the participants, and they may be more inclined to persist.

**Future Studies**

The loss in observations for T2 and T3, the many predictor variables added to the regression and growth models, and the exploratory nature of those models require that the results in this study be interpreted with caution. Future work should obtain more complete observations per participant across time, and this will allow to more accurately estimate models using those variables that might best predict academic and social engagement. Future work can also narrow down predictor variables that will be used through predetermined, theory- based hypotheses.

This work examined engagement change over very short time points and did not find much change within participants. Future work can examine engagement across longer time periods. This work has demonstrated that earlier engagement levels strongly

predict later engagement. Therefore, future work should try to examine students' engagement even before they enter university as pre college differences account for a lot of college attrition (Murtaugh, Burns, & Schuster, 1999). Early life student daily activities and personality may reveal more useful information about engagement changes. Since extraversion and openness to experience seem to be important trait predictors, future work in this area could examine lower level facets to better examine at the secondary trait level why these two factors predict different academic engagement trajectories changes between students. Much information is being lost when personality traits are examined at the primary level (Paunonen & Ashton (2001).

## General Discussion

Being in university supposes that students set goals and requires they motivate themselves to achieve them. Whether students want to graduate with a diploma with the sole goal of bettering their chances of a better job and a better life, or whether students want to learn more, gain more in diverse experiences, or participate in intense programs of study, or in highly selective institutions, efficient ways of continued motivation can be very useful to know. This information is more important in the changing university education experience in the last few years. There is diversity in student characteristics with many non- traditional students attending university than in previous years. University education is becoming more and more a different experience for individual students than it used to be. The experience can be made more efficient by motivating students differently and by having students do those activities that motive them most, that

will help them become more engaged in turn, and, subsequently will lead them to persist, learn more, and learn faster.

A domain in which university student engagement is lacking information is social engagement. That is, knowing students behaviors, cognitions, and emotions as they pertain to their social experiences with classmates and friends on or around campus in non- academic tasks. Though measures of student engagement exist, there is a need for a more socially oriented measure of engagement as social engagement may benefit students. The measure presented in part 1 aims to become an additional tool for researchers to use to assess university students' engagement to non- learning social aspects of university life that often have positive effects on students. This work demonstrates various correlations of interest (i.e., personality traits and academic engagement) to our measure of social engagement.

The exploratory work in part 2 has added some interesting information about academic and social engagement, and how those relate to students' daily activities and their personality characteristics. Additionally, part 2 contributes important exploratory longitudinal information about academic and social engagement in university students, and how daily activities and personality may predict any changes in engagement over a short period. Future work can extend the longitudinal work presented here. Though work has been done in examining changes in engagement from high school to university, that work does not continue examining students through their university career especially beyond their first year. It is important to track students consistently from high school though the end of university in order to obtain better information about engagement

changes which will be vital in developing better individualized interventions for academic and social engagement change in the future.

In conclusion, though much of the work in this dissertation, especially part 2, can only be interpreted tentatively, this work can be promising. It can inform future work on interventions for university students. If certain students may have specific disadvantages to becoming engaged due to activities or personality characteristics, perhaps interventions implemented at universities can target those students by prescribing activities or sets of behaviors that will boost those students' engagement levels. It is easier to change such behaviors as opposed to changing broader life circumstances. For example, if a student is identified as low on extraversion, that student may be paired with more mentors (peer and faculty) so those students may have more opportunities to enact or practice those extraverted behaviors that tend to benefit other students (e.g., asking questions, participating in study groups, doing presentations, etc). Though this work needs to be replicated, it suggests a few preliminary ways in which targeted interventions can be developed in the future.

## References


Ahlfeldt, S., Mehta, S., & Sellnow, T. (2005). Measurement and analysis of student engagement in university classes where varying levels of PBL methods of instruction are in use. *Higher Education Research & Development*, *24*(1), 5-20.

Altermatt, E. R., & Pomerantz, E. M. (2003). The development of competence-related and motivational beliefs: An investigation of similarity and influence among friends. *Journal of Educational Psychology*, *95*(1), 111.

Allen, D. (1999). Desire to finish college: An empirical link between motivation and persistence. *Research in higher education*, *40*(4), 461-485.

Ashton, M. C., & Lee, K. (2001). A theoretical basis for the major dimensions of personality. *European Journal of Personality*, *15*(5), 327-353.

Ashton, M. C., Lee, K., & Paunonen, S. V. (2002). What is the central feature of extraversion? Social attention versus reward sensitivity. *Journal of personality and social psychology*, *83*(1), 245.

Astin, A. W. (1984). Student involvement: A developmental theory for higher education. *Journal of college student personnel*, *25*(4), 297-308.

Babcock, P., & Marks, M. (2010). Leisure college, USA: The decline in student study time. *American Enterprise Institute for Public Policy Research*, *7*, 1-7.

Babcock, P., & Marks, M. (2011). The Falling Time Cost of College : Evidence from Half a Century of Time Use Data. *Departmental Working Papers*.

Babyak, M. A. (2004). What you see may not be what you get: a brief, nontechnical introduction to overfitting in regression-type models. *Psychosomatic medicine*, *66*(3), 411-421.

Bauer, K. W., & Liang, Q. (2003). The Effect of Personality and Precollege Characteristics on First-Year Activities and Academic Performance. *Journal of College Student Development*, *44*(3), 277–290. doi:10.1353/csd.2003.0023.

Brint, S., & Cantwell, A. M. (2012). Portrait of the disengaged. Research & occasional paper series: CSHE, 9 (12).

Brint, S., & Cantwell, A. M. (2010). Undergraduate Time Use and Academic Outcomes : Results from the University of California Undergraduate Experience Survey 2006. *Teachers College Record*, *112*(9), 2441–2470.

Brint, S., Cantwell, A. M., & Hanneman, R. A. (2008). The two cultures of undergraduate academic engagement. *Research in Higher Education*, *49*(5), 383–402.

Bryk, A. S., & Raudenbush, S. W. (1987). Application of hierarchical linear models to assessing change. *Psychological Bulletin*, *101*(1), 147.

Caspi, A., Chajut, E., Saporta, K., & Beyth-Marom, R. (2006). The influence of personality on social participation in learning environments. *Learning and Individual Differences*, *16*(2), 129-144.

Caspi, A., Roberts, B. W., & Shiner, R. L. (2005). Personality development: Stability and change. *Annual Review in Psycholology, 56*, 453-484.

Carter, M., McGee, R., Taylor, B., & Williams, S. (2007). Health outcomes in adolescence: Associations with family, friends and school engagement. *Journal of adolescence*, *30*(1), 51-62.

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of health and social behavior*, 385-396.

Connell, J. P., & Wellborn, J. G. (1991). Competence, autonomy, and relatedness: A motivational analysis of self-system processes.

Corker, K. S., Donnellan, M. B., Kim, S. Y., Schwartz, S. J., & Zamboanga, B. L. (2015). College student samples are not always equivalent: The magnitude of personality differences across colleges and universities. *Journal of personality*.

De Raad, B., & Schouwenburg, H. C. (1996). Personality in learning and education: A review. *European Journal of personality*, *10*(5), 303-336.

Diener, E. D., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of personality assessment*, *49*(1), 71-75.

Eccles, J. S., & Wigfield, A. (2002). Motivational beliefs, values, and goals. *Annual review of psychology*, *53*(1), 109-132.

Flynn, F. J. (2005). Having an open mind: the impact of openness to experience on interracial attitudes and impression formation. *Journal of personality and social psychology*, *88*(5), 816.

Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of educational research*, *74*(1), 59-109.

Fuligni, A. J., Yip, T., & Tseng, V. (2002). The impact of family obligation on the daily activities and psychological well-being of Chinese American adolescents. *Child development*, *73*(1), 302-314.

Glass, T. A., De Leon, C. F. M., Bassuk, S. S., & Berkman, L. F. (2006). Social engagement and depressive symptoms in late life longitudinal findings. *Journal of Aging and Health*, *18*(4), 604-628.

Helson, R., Kwan, V. S., John, O. P., & Jones, C. (2002). The growing evidence for personality change in adulthood: Findings from research with personality inventories. *Journal of Research in Personality*, *36*(4), 287-306.

Helson, R., Mitchell, V., & Moane, G. (1984). Personality and patterns of adherence and nonadherence to the social clock. *Journal of Personality and Social Psychology*, *46*(5), 1079.

Helson, R., & Roberts, B. W. (1994). Ego development and personality change in adulthood. *Journal of Personality and Social Psychology*, *66*(5), 911.

Horn, L. J., & Carroll, C. D. (1996). *Nontraditional Undergraduates: Trends in Enrollment from 1986 to 1992 and Persistence and Attainment among 1989-90 Beginning Postsecondary Students. Postsecondary Education Descriptive Analysis Reports. Statistical Analysis Report*. US Government Printing Office, Superintendent of Documents, Mail Stop: SSOP, Washington, DC 20402-9328.

Horstmanshof, L., & Zimitat, C. (2007). Future time orientation predicts academic engagement among first-year university students. *British Journal of Educational Psychology*, *77*(3), 703-718.

Hu, S., & Kuh, G. D. (2002). Being (dis) engaged in educationally purposeful activities: The influences of student and institutional characteristics. *Research in Higher Education*, *43*(5), 555-575.

Hurst, D., & Smerdon, B. (2000). Postsecondary Students with Disabilities: Enrollment, Services, and Persistence. Stats in Brief. NCES 2000-092. *National Center for Education Statistics*.

Ishitani, T. T. (2003). A longitudinal approach to assessing attrition behavior among first-generation students: Time-varying effects of pre-college characteristics. *Research in higher education*, *44*(4), 433-449.

John, O. P., & Srivastava, S. (1999). The Big-Five trait taxonomy: History, measurement, and theoretical perspectives. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research* (Vol. 2, pp. 102–138). New York: Guilford Press.

Jordan, W. J., & Nettles, S. M. (1999). How students invest their time out of school. *Center for Research on the Education of Students Placed at Risk Report*, *29*.

Judge, T. A., Higgins, C. A., Thoresen, C. J., & Barrick, M. R. (1999). The big five personality traits, general mental ability, and career success across the life span. *Personnel psychology*, *52*(3), 621-652.

Kaiser, R. T. (1996). *A Longitudinal Examination of Explicit Motivation*. (Unpublished doctoral dissertation). University of California, Riverside.

Kim, H. J., Shin, K. H., & Swanger, N. (2009). Burnout and engagement: A comparative analysis using the Big Five personality dimensions. *International Journal of Hospitality Management*, *28*(1), 96-104.

Kindermann, T. A. (2007). Effects of naturally existing peer groups on changes in academic engagement in a cohort of sixth graders. *Child Development*, *78*(4), 1186-1203.

Konrath, S. H., Chopik, W. J., Hsing, C. K., & O'Brien, E. (2014). Changes in Adult Attachment Styles in American College Students Over Time A Meta-Analysis. *Personality and Social Psychology Review*, 1088868314530516.

Krause, K. L., & Coates, H. (2008). Students' engagement in first-year university. *Assessment & Evaluation in Higher Education*, *33*(5).

Kreighbaum, A. (2017, June 15). Reset of rules aimed at for- profit begins. *Inside Hiegher Ed*. Retrieved from https://www.insidehighered.com/news/2017/06/15/education-department-hit-pause-two-primary-obama-regulations-aimed-profits

Kuh, G. D., Cruce, T. M., Shoup, R., Kinzie, J., & Gonyea, R. M. (2008). Unmasking the effects of student engagement on first-year college grades and persistence. *The Journal of Higher Education*, *79*(5), 540-563.

Kuh, G. D. (2003). What we're learning about student engagement from NSSE. Change, 35(2), 24–32.

Kurtz, J. E., Puher, M. A., & Cross, N. A. (2012). Prospective prediction of college adjustment using self- and informant-rated personality traits. *Journal of personality assessment*, *94*(6), 630–7. doi:10.1080/00223891.2012.672506.

Lodi-Smith, J., & Roberts, B. W. (2007). Social investment and personality: A meta-analysis of the relationship of personality traits to investment in work, family, religion, and volunteerism. *Personality and Social Psychology Review*, *11*(1), 68-86.

Lounsbury, J. W., Sundstrom, E., Loveland, J. M., & Gibson, L. W. (2003). Intelligence,"Big Five" personality traits, and work drive as predictors of course grade. *Personality and individual differences*, *35*(6), 1231-1239.

Madge, C., Meek, J., Wellens, J., & Hooley, T. (2009). Facebook, social integration and informal learning at university: 'It is more for socializing and talking to friends about work than for actually doing work'. *Learning, Media and Technology*, *34*(2), 141-155.

Martin, J. D. (2009). *How school practices to promote parental involvement influence student success* (Doctoral dissertation, The Claremont Graduate University and San Diego State University).

Maslach C, Leiter MP. (1997). *The truth about burnout*. San Francisco: Jossey-Bass.

Maas, C. J., & Hox, J. J. (2005). Sufficient sample sizes for multilevel modeling. *Methodology, 1*(3), 86- 92.

McInnis, C., James, R. H., & McNaught, C. (1995). *First year on campus: Diversity in the initial experiences of Australian undergraduates*. AGPS [for] Centre for the Study of Higher Education, University of Melbourne.

McInnis, C., James, R., & Hartley, R. (2000). *Trends in the first year experience: In Australian universities*. Canberra: Department of Education, Training and Youth Affairs.

Murtaugh, P. A., Burns, L. D., & Schuster, J. (1999). Predicting the retention of university students. *Research in higher education*, *40*(3), 355-371.

National Center for Education Statistics. (2014). Total fall enrollment in degree-granting postsecondary institutions, by level of enrollment, sex, attendance status, and race/ethnicity of student: Selected years, 1976 through 2013 [Data file]. Retrieved from https://nces.ed.gov/programs/digest/d14/tables/dt14_306.10.asp. June 2017.

National Center for Education Statistics. (2016). The condition of education 2016 at a glance. Retrieved from https://nces.ed.gov/pubs2016/2016144_ataglance.pdf.

Nemanick Jr, R. C., & Clark, E. M. (2002). The differential effects of extracurricular activities on attributions in resume evaluation. *International Journal of Selection and Assessment*, *10*(3), 206-217.

Noftle, E. E., & Robins, R. W. (2007). Personality predictors of academic outcomes: big five correlates of GPA and SAT scores. *Journal of personality and social psychology*, *93*(1), 116.

Nonis, S. A., & Hudson, G. I. (2010). Performance of college students: Impact of study time and study habits. *Journal of Education for Business*, *85*(4), 229-238.

Nunez, A. M., & Cuccaro-Alamin, S. (1998). *First-Generation Students: Undergraduates Whose Parents Never Enrolled in Postsecondary Education. Statistical Analysis Report. Postsecondary Education Descriptive Analysis Reports*.

Ozer, D. J., & Benet-Martinez, V. (2006). Personality and the prediction of consequential outcomes. *Annual Review Psychology*, *57*, 401-421.

Paunonen, S. V., & Ashton, M. C. (2001). Big Five predictors of academic achievement. *Journal of Research in Personality*, *35*(1), 78-90.

Paunonen, S. V., & Ashton, M. C. (2001). Big Five factors and facets and the prediction of behavior. *Journal of Personality and Social Psychology, 81,* 524–539.

Pike, G. R. (2006). The convergent and discriminant validity of NSSE scalelet scores. *Journal of College Student Development*, *47*(5), 550-563.

Pike, G. R., & Kuh, G. D. (2005). First-and second-generation college students: A comparison of their engagement and intellectual development. *Journal of Higher Education*, 276-300.

Pintrich, P. R. (2003). A motivational science perspective on the role of student motivation in learning and teaching contexts. *Journal of educational Psychology*, *95*(4), 667.

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of applied psychology*, *88*(5), 879.

Poropat, A. E. (2009). A meta-analysis of the five-factor model of personality and academic performance. *Psychological bulletin*, *135*(2), 322.

Preckel, F., Holling, H., & Vock, M. (2006). Academic underachievement: Relationship with cognitive motivation, achievement motivation, and conscientiousness. *Psychology in the Schools*, *43*(3), 401-411.

Ramey, H. L., Busseri, M. A., Khanna, N., Hamilton, Y. N., & Rose-Krasnor, L. (2010). Youth engagement and suicide risk: Testing a mediated model in a Canadian community sample. *Journal of youth and adolescence*, *39*(3), 243-258.

Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical linear models: Applications and data analysis methods* (Vol. 1). Sage.

Roberts, B. W., & DelVecchio, W. F. (2000, January). The rank-order consistency of personality traits from childhood to old age: a quantitative review of longitudinal studies. *Psychological Bulletin*. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/10668348.

Roberts, B. W., Kuncel, N. R., Shiner, R., Caspi, A., & Goldberg, L. R. (2007). The power of personality: The comparative validity of personality traits, socioeconomic status, and cognitive ability for predicting important life outcomes. *Perspectives in Psychological Science, 2,* 313– 345.

Roberts, B. W., Walton, K., Bogg, T., & Caspi, A. (2006). De- investment in work and non-normative personality trait change in young adulthood. *European Journal of Personality*, *20*(6), 461-474.

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), 1–25. doi:10.1037/0033-2909.132.1.1

Roberts, B. W., Wood, D., & Lodi- Smith, J. (2005). Evaluating five factor theory and social investment perspectives on personality trait development. *Journal of Research in Personality*, *39*(1), 166-184.

Roderick, M., Coca, V., & Nagaoka, J. (2011). Potholes on the road to college: High school effects in shaping urban students' participation in college application, four-year college enrollment, and college match. *Sociology of Education*, *84*(3), 178-211.

Roebken, H. (2007). The influence of goal orientation on student satisfaction, academic engagement and achievement. *Electronic Journal of Research in Educational Psychology*, *5*(3), 679-704.

Ryan, A. M., & Patrick, H. (2001). The classroom social environment and changes in adolescents' motivation and engagement during middle school. *American Educational Research Journal*, *38*(2), 437-460.

Saczynski, J. S., Pfeifer, L. A., Masaki, K., Korf, E. S., Laurin, D., White, L., & Launer, L. J. (2006). The effect of social engagement on incident dementia The Honolulu-Asia Aging Study. *American Journal of Epidemiology*, *163*(5), 433-440.

Shernoff, D. J., Csikszentmihalyi, M., Shneider, B., & Shernoff, E. S. (2003). Student engagement in high school classrooms from the perspective of flow theory. *School Psychology Quarterly*, *18*(2), 158.

Soto, C. J., John, O. P., Gosling, S. D., & Potter, J. (2011). Age differences in personality traits from 10 to 65: Big Five domains and facets in a large cross-sectional sample. *Journal of Personality and Social Psychology*, *100*(2), 330–48. doi:10.1037/a0021717.

Srivastava, S., John, O. P., Gosling, S. D., & Potter, J. (2003). Development of personality in early and middle adulthood: set like plaster or persistent change?. *Journal of personality and social psychology*, *84*(5), 1041.

Stinebrickner, R., & Stinebrickner, T. R. (2004). Time-use and college outcomes. *Journal of Econometrics*. 121, 243–269.

Terenzini, P. T., Springer, L., Yaeger, P. M., Pascarella, E. T., & Nora, A. (1996). First-generation college students: Characteristics, experiences, and cognitive development. *Research in Higher education*, *37*(1), 1-22.

Tinto, V. (1993). Building Community. *Liberal Education*, *79*(4), 16-21.

Trautwein, U., Lüdtke, O., Roberts, B. W., Schnyder, I., & Niggli, A. (2009). Different forces, same consequence: conscientiousness and competence beliefs are independent predictors of academic effort and achievement. *Journal of personality and social psychology*, *97*(6), 1115.

Tross, S. A., Harper, J. P., Osher, L. W., & Kneidinger, L. M. (2000). Not just the usual cast of characteristics: Using personality to predict college performance and retention. *Journal of College Student Development*, *41*(3), 323.

University of California. (2017). University of California Undergraduate experience survey (UCUES). Retrieved from http://studentsurvey.universityofcalifornia.edu/admin/survey.html.

U.S. Bureau of Labor Statistics. (2015). Charts by topic: Students. American Time Use Survey. Retrieved from http://www.bls.gov/tus/charts/students.htm.

U.S. Census Bureau. (2014). Measuring America: The changing U.S. economy. Retrieved from https://www.census.gov/library/visualizations/2014/comm/cb14-tps34_changing_economy.html.

U.S. Department of Education. (2017). Better information for better college choice and institutional performance. Retrieved from https://collegescorecard.ed.gov/assets/BetterInformationForBetterCollegeChoiceAndInstitutionalPerformance.pdf.

U.S. House of Representatives. (2013). Higher education act of 1965 (HEA). Retrieved from http://legcounsel.house.gov/Comps/HEA65_CMD.pdf

Van Aken, M. A., Denissen, J. J., Branje, S. J., Dubas, J. S., & Goossens, L. (2006). Midlife concerns and short- term personality change in middle adulthood. *European Journal of Personality*, *20*(6), 497-513.

Wentzel, K. R. (1994). Relations of social goal pursuit to social acceptance, classroom behavior, and perceived social support. *Journal of Educational Psychology*, *86*(2), 173.

Wentzel, K. R., Barry, C. M., & Caldwell, K. A. (2004). Friendships in Middle School: Influences on Motivation and School Adjustment. *Journal of educational psychology*, *96*(2), 195.

Witkow, M. R., Gillen-O'Neel, C., & Fuligni, A. J. (2012). College social engagement and school identification: Differences by college type and ethnicity. *Journal of Applied Developmental Psychology*, *33*(5), 243-251.

York-Anderson, D. C., & Bowman, S. L. (1991). Assessing the college knowledge of first-generation and second-generation college students. *Journal of College Student Development*.

Zhao, C-M., & Kuh, G. D. (2004). Adding value: Learning communities and student engagement. *Research in Higher Education*, 45, 115–138.

Zimmerman, B. J. (2000). Self-efficacy: An essential motive to learn. *Contemporary educational psychology*, *25*(1), 82-91.

Zunzunegui, M. V., Alvarado, B. E., Del Ser, T., & Otero, A. (2003). Social networks, social integration, and social engagement determine cognitive decline in community-dwelling Spanish older adults. *The Journals of Gerontology Series B.*

Tables

Table 1.

*Part 1: Social engagement scale item correlations to the total score and Cronbach's α if item is deleted.*

| Item number | Corrected Item- Total | α if deleted |
|---|---|---|
| 1. Socialize with the same group of UCR students. | .607** | .828 |
| 2. Initiated a conversation with a UCR student you did not know. | .590** | .829 |
| 3. Volunteered on campus. | .620** | .827 |
| 4. Attend a social event on campus. | .750** | .813 |
| 5. Spend time with friends on campus. | .739** | .815 |
| 6. Socialize with various groups of UCR students. | .741** | .815 |
| 7. Participate in a club or organization on campus. | .659** | .824 |
| 8. *Have trouble finding a good place to hang out with friends at UCR. | .043 | .872 |
| 9. Have a meal with a friend (or friends). | .628** | .825 |
| 10. Have a serious conversation with other UCR students. | .704** | .818 |
| 11. Attend an off campus event with UCR friends. | .737** | .815 |

* Item excluded in Part 2, ** p< .01, N ranges from 608 to 616 due to missing data.

Table 2.

*Part 1: Social engagement total score correlations.*

| **Correlates** | Social Engagement |
|---|---|
| How socially engaged[a] | .547** |
| Academic Engagement | .444** |
| Neuroticism | -.116** |
| Extraversion | .391** |
| Openness | .214** |
| Agreeableness | .112** |
| Conscientiousness | .102* |
| Perceived stress | -.085* |
| Satisfaction with life | .147** |
| Overall satisfaction with UCR | .377** |
| Daily activities, time spent with/ on: | |
| Friends | .153** |
| Partner | -.075 |
| Studying | .089 |
| Class | .097* |
| Family | .037 |

* $p < .05$, **$p < .01$
N ranges from 610 to 615 due to missing data
[a]n = 123

Table 3.

*Part 2: Participant frequencies for ethnicity, year of study, and sex at T1, T2, and T3.*

| | T1 | | T2 | | T3 | |
|---|---|---|---|---|---|---|
| Ethnicity | N | % | N | % | N | % |
| Asian American | 317 | 47.1 | 78 | 40.8 | 53 | 55.2 |
| Hispanic/ Latino | 200 | 29.7 | 73 | 38.2 | 27 | 28.1 |
| African/ American | 21 | 3.1 | 5 | 2.6 | 2 | 2.1 |
| White | 77 | 11.4 | 31 | 16.2 | 11 | 11.5 |
| Native American | 1 | .1 | 1 | .5 | 0 | 0 |
| Unknown | 2 | .3 | 1 | .5 | 0 | 0 |
| Mixed | 7 | 1 | 2 | 1 | 1 | .9 |
| Missing | 48 | 7.1 | 0 | 0 | 3 | 2.2 |
| Year at UCR | | | | | | |
| 1 | 189 | 28.1 | 55 | 28.8 | 47 | 49.0 |
| 2 | 228 | 33.9 | 62 | 32.5 | 23 | 24.0 |
| 3 | 161 | 23.9 | 56 | 29.3 | 16 | 16.7 |
| 4 | 67 | 10.0 | 18 | 9.4 | 9 | 9.4 |
| 5 | 4 | .6 | 0 | 0 | 1 | 1 |
| Missing | 24 | 3.6 | 0 | 0 | 1 | 0 |
| Sex | | | | | | |
| Male | 155 | 23 | 39 | 20.4 | 13 | 13.4 |
| Female | 491 | 73 | 152 | 79.0 | 82 | 84.5 |
| Rather not say | 3 | .4 | 0 | 0 | 0 | 0 |
| Missing | 24 | 3.6 | 0 | 0 | 2 | 2.1 |

Table 4.
*Part 2: Independent samples t-tests measuring T1 and T2 academic and social engagement and traits against T3 completers and non completers.*

| | df | Mean Dif. | SD Dif. | t | 95% Mean Dif. CI Lower | 95% Mean Dif. CI Upper | d |
|---|---|---|---|---|---|---|---|
| T1 | | | | | | | |
| Academic | 634 | .108 | .094 | 1.284 | -.057 | .274 | .102 |
| Social | 627 | .128 | .115 | 1.113 | -.098 | .354 | .089 |
| N | 645 | .031 | .081 | .387 | -.127 | .190 | .030 |
| E | 645 | .111 | .084 | 1.321 | -.054 | .277 | .104 |
| O | 644 | .051 | .062 | .818 | -.071 | .173 | .064 |
| A | 645 | -.031 | .067 | -.458 | -.162 | .101 | .036 |
| C | 121 | -.026 | .079 | -.324 | -.183 | .131 | .059 |
| T2 | | | | | | | |
| Academic | 189 | .181 | .146 | 1.243 | -.106 | .468 | .181 |
| Social | 189 | .298 | .201 | 1.484 | -.098 | .694 | .216 |
| N | 135 | .024 | .133 | .183 | -.238 | .287 | .032 |
| E | 135 | .222 | .147 | 1.505 | -.070 | .513 | .259 |
| O | 135 | -.060 | .118 | -.507 | -.292 | .173 | .087 |
| A | 135 | -.084 | .103 | -.820 | -.287 | .119 | .014 |
| C | 135 | -.049 | .128 | -.381 | -.303 | .205 | .066 |

Table 5.

*Alpha reliabilities for engagement and traits for T1, T2, and T3.*

| | N items | α | N cases |
|---|---|---|---|
| Academic | | | |
| T1 | 24 | .898 | 577 |
| T2 | - | .911 | 180 |
| T3 | - | .908 | 36 |
| Social | | | |
| T1 | 10 | .872 | 611 |
| T2 | - | .895 | 185 |
| T3 | - | .892 | 93 |
| Neuroticism | | | |
| T1 | 8 | .784 | 599 |
| T2 | - | .745 | 131 |
| T3 | - | .810 | 90 |
| Extraversion | | | |
| T1 | 8 | .828 | 617 |
| T2 | - | .855 | 132 |
| T3 | - | .877 | 94 |
| Openness | | | |
| T1 | 10 | .720 | 598 |
| T2 | - | .772 | 125 |
| T3 | - | .753 | 91 |
| Agreeableness | | | |
| T1 | 9 | .738 | 597 |
| T2 | - | .662 | 127 |
| T3 | - | .797 | 90 |
| Conscientiousness | | | |
| T1 | 9 | .778 | 596 |
| T2 | - | .800 | 124 |
| T3 | - | .865 | 90 |

* $p < .05$, ** $p < .01$

Table 6.

*Means and standard deviation values for academic and social engagement at T1 by ethnicity groups.*

| | Academic Engagement | | Social Engagement | |
|---|---|---|---|---|
| | Mean | SD | Mean | SD |
| Asian/ American | 3.501 | .766 | 3.791 | .963 |
| Latino/ Hispanic | 3.658 | .740 | 3.507 | 1.116 |
| African/ American | 3.657 | .777 | 3.720 | 1.119 |
| White | 3.852 | .731 | 3.525 | 1.080 |

Table 7.

*Part 2: Engagement correlations between time points T1, T2, and T3 and corresponding sample sizes.*

| | Academic | | | Social | | |
|---|---|---|---|---|---|---|
| | T1 | T2 | T3 | T1 | T2 | T3 |
| Social | | | | | | |
| T1 | .457** | .368** | .557** | - | - | - |
| T2 | .347** | .495** | .344* | .726** | - | - |
| T3 | .255* | .198 | .433** | .639** | .738** | - |
| Academic | | | | | | |
| T1 | - | .747** | .736** | .450** | .335** | .264** |
| T2 | - | - | .758** | .369** | .483** | .185 |
| T3 | - | - | - | .552** | .318 | .442** |

* $p < .05$, ** $p < .01$

$n_{T1xT2} = 189$, $n_{T3xT1} = 95$, $n_{T2xT3} = 37$, $n_{T3} = 96$, $n_{T2} = 191$, $n_{T1} = 628$.

Table 8.

*Part 2: Correlations between Academic and Social engagement scale mean scores and academic and social engagement single item responses (for a subsample of participants*.

| | How academically engaged are you? | How socially engaged are you? |
|---|---|---|
| Academic | | |
| T1 | .358** | .169 |
| T2 | .493** | .050 |
| T3 | .533** | .477** |
| Social | | |
| T1 | .241** | .533** |
| T2 | .379* | .438** |
| T3 | .574** | .642** |

* p < .05, ** p < .01
$n_{T1} = 125$, $n_{T2} = 42$, $n_{T3} = 23$

Table 9.

*Part 2: Trait correlations across time points*.

| | T1 | | | | | T2 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | N | E | O | A | C | N | E | O | A | C |
| T1 | | | | | | | | | | |
| N | - | -.245** | -.116** | -.348** | -.313** | . 758** | -.057 | -.103 | -.184* | -.102 |
| E | | - | .217** | .080* | .191** | -.161 | .847** | .233** | -.002 | .042 |
| O | | | - | .092* | .118** | -.014 | .224** | .784** | .089 | .012 |
| A | | | | - | .385** | -.374** | -.023 | -.067 | .732** | .159 |
| C | | | | | - | -.167 | .034 | .024 | .086 | .844** |
| T2 | | | | | | | | | | |
| N | | | | | | - | | | | |
| E | | | | | | -.080 | - | | | |
| O | | | | | | -.017 | .289** | - | | |
| A | | | | | | -.365** | -.019 | .092 | - | |
| C | | | | | | -.182* | .036 | .010 | .093 | - |
| T3 | | | | | | | | | | |
| N | .690** | -.227* | -.259* | -.339** | -.350** | .825** | -.056 | -.058 | -.442** | -.117 |
| E | -.219* | .850** | .345** | .098 | .172 | -.193 | .903** | .106 | -.045 | .033 |
| O | -.216* | .314** | .768** | .173 | .194 | -.083 | .250 | .788** | .118 | .091 |
| A | -.421** | .111 | .148 | .615** | .299** | -.270 | -.059 | .170 | .731** | .090 |
| C | -.302** | .101 | .088 | .288** | .720** | -.246 | .001 | .163 | .009 | .865** |

* p < .05, ** p < .01, $n_{T1x\,T1}$ = 646 - 647 due to missing data, $n_{T1xT2}$ = 137, $n_{T1xT3}$ = 97, $n_{T2xT3}$ = 37

Table 10.

*Part 2: Engagement with Traits correlations T1, T2, T3.*

| | Academic | | | Social | | |
|---|---|---|---|---|---|---|
| | T1 | T2 | T3 | T1 | T2 | T3 |
| T1 | | | | | | |
| N | -.177** | -.164* | -.213* | -.085* | -.190** | -.263** |
| E | .377** | .352** | .383** | .375** | .443** | .394** |
| O | .363** | .260** | .339** | .205** | .250** | .305** |
| A | .217** | .063 | .256* | .096* | .077 | .230* |
| C | .426** | .373** | .353** | .085* | .143* | .093 |
| T2 | | | | | | |
| N | -.202* | -.111 | -.196 | -.162 | -.106 | -.398* |
| E | .346** | .437** | .404* | .362** | .391** | .386* |
| O | .366** | .356** | -.044 | .151 | .249** | .031 |
| A | .144 | .016 | -.043 | .257** | .137 | .244 |
| C | .416** | .352** | .326* | -.069 | -.014 | -.102 |
| T3 | | | | | | |
| N | -.310** | -.136 | -.444** | -.383** | -.345* | -.316** |
| E | .356** | .410* | .507** | .455** | .389* | .456** |
| O | .394** | .215 | .437** | .390** | .178 | .287** |
| A | .300** | .082 | .383** | .323** | .381* | .301** |
| C | .435** | .501** | .418** | .117 | -.011 | .054 |

* $p < .05$, ** $p < .01$

$n_{T1}$ = 628- 629, , $n_{T1\text{-}T2}$ = *191,* $n_{T1\text{-}T3}$ = *93-96, ,* $n_{T2\text{-}T3}$ = *37,* $n_{T3\text{-}T1}$ = *96* T3= 93, T2= 137, T2 traits to T1 and T2 engagement = 137

Table 11.

*Part 2: Daily activities correlations T1 with T2, T2 with T3, and T1 with T3.*

| Daily Activities | T1 with T2 | T2 with T3 | T1 with T3 |
|---|---|---|---|
| Class | .134 | .175 | .026 |
| Study | .255** | .565** | .044 |
| Sleep | .263** | .305 | .121 |
| Friend | .115 | .186 | .211* |
| Relax | .294** | .319 | .006 |
| Eat | .117 | .163 | .360** |
| Locomotion | .359** | .281 | .387** |
| Work | .341** | .503** | .268** |
| Groom | .316** | .470** | .405** |
| Partner | .144 | .063 | -.002 |
| Exercise | .560** | -.089 | .091 |
| Recreate | .065 | .160 | .407** |
| Family | .188* | - | .220* |
| Housework | .286** | .113 | .076 |
| Shopping/ Errands | .044 | .388* | -.014 |

* $p < .05$, ** $p < .01$

note: $n_{T1\text{-}T2} = 136$, $n_{T2\text{-}T3} = 37$, and $n_{T1\text{-}T3} = 37$

Table 12.

*Part 2: T1 Daily activities correlations with T1 Academic and Social engagement and Traits.*

| | AE | SE | N | E | O | A | C |
|---|---|---|---|---|---|---|---|
| Class | .112** | .120** | -.012 | .050 | -.033 | .012 | .019 |
| Study | -.092* | .074 | .007 | -.034 | -.014 | .054 | .041 |
| Sleep | -.168** | -.024 | .054 | .009 | -.022 | -.105** | -.165** |
| Friend | -.061 | .140** | -.050 | -.005 | .030 | .009 | -.119** |
| Relax | -.087* | -.089* | -.054 | -.066 | .036 | -.030 | -.065 |
| Eat | .104** | .046 | -.109** | .011 | -.053 | .036 | .066 |
| Locomotion | -.011 | -.135** | .023 | -.013 | -.067 | .105** | .101* |
| Work | .019 | -.030 | .038 | .048 | .053 | -.045 | .078 |
| Groom | .019 | .060 | .002 | .073 | .004 | .024 | .052 |
| Partner | -.144** | -.076 | .090* | -.026 | -.071 | -.058 | -.083* |
| Exercise | .093* | .113** | -.165** | .049 | .065 | .046 | .071 |
| Recreate | -.031 | -.062 | .007 | -.046 | .074 | -.023 | -.047 |
| Family | .076 | -.042 | -.013 | .018 | .028 | .098* | .148** |
| Housework | .046 | -.069 | .078 | .006 | .078 | -.050 | .048 |
| Shopping/ Errands | -.083* | -.053 | .056 | -.050 | -.038 | -.014 | -.038 |

* $p < .05$, ** $p < .01$

*n* = 622-632 due to missing data

Table 13.

*Part 2: T2 Daily activities correlations with T2 Academic and social engagement and Traits*.

| | AE | SE | N | E | O | A | C |
|---|---|---|---|---|---|---|---|
| Class | -.027 | .017 | -.084 | -.095 | -.096 | -.013 | -.044 |
| Study | .115 | .040 | .086 | -.033 | -.015 | -.080 | -.013 |
| Sleep | .061 | .053 | .045 | .044 | -.021 | -.014 | -.184* |
| Friend | -.080 | .190* | .031 | .060 | .059 | -.041 | -.105 |
| Relax | -.203* | -.112 | .042 | -.148 | .077 | .048 | -.163 |
| Eat | .034 | -.033 | -.127 | -.076 | -.173* | .081 | .194* |
| Locomotion | -.011 | .026 | .174* | -.010 | .063 | -.055 | .055 |
| Work | .026 | -.032 | -.058 | .091 | .100 | .052 | .225** |
| Groom | -.013 | -.035 | .115 | -.012 | -.040 | -.022 | .100 |
| Partner | -.221* | -.094 | -.042 | -.073 | -.072 | -.066 | -.003 |
| Exercise | .136 | .216** | -.176* | .072 | .106 | .015 | .100 |
| Recreate | -.029 | .033 | .030 | .058 | .041 | -.071 | -.027 |
| Family | .019 | -.075 | -.253** | -.009 | -.044 | .123 | -.011 |
| Housework | .095 | .017 | .050 | .013 | .120 | .087 | .038 |
| Shopping/ Errands | .201* | -.016 | -.007 | .143 | .061 | .098 | .127 |

* $p < .05$, ** $p < .01$

*n = 134*

Table 14.

*Part 2: T3 Daily activities correlations with T3 Academic and Social engagement and Traits*.

| | AE | SE | N | E | O | A | C |
|---|---|---|---|---|---|---|---|
| Class | .068 | .043 | -.106 | -.045 | -.045 | .007 | .039 |
| Study | .185 | .174 | .048 | .111 | .075 | -.092 | .154 |
| Sleep | -.132 | .005 | .064 | .012 | -.238* | -.021 | -.142 |
| Friend | .019 | .238* | -.194 | .250* | .172 | .089 | .031 |
| Relax | -.132 | -.026 | .110 | -.028 | -.152 | .060 | -.082 |
| Eat | .001 | .077 | -.191 | .157 | -.054 | .150 | -.112 |
| Locomotion | .003 | -.043 | -.071 | -.153 | .055 | .115 | .002 |
| Work | -.040 | -.032 | .111 | .082 | .023 | -.158 | .086 |
| Groom | -.072 | -.115 | -.010 | -.117 | .136 | .136 | .030 |
| Partner | -.128 | -.130 | -.045 | -.085 | .226* | .047 | .088 |
| Exercise | -.103 | .020 | .052 | -.054 | -.069 | -.098 | -.235* |
| Recreate | -.102 | -.229* | .136 | -.259* | -.188 | -.286** | -.184 |
| Family | -.036 | -.124 | -.001 | -.074 | -.011 | .132 | .077 |
| Housework | .208* | -.095 | -.201 | -.077 | .146 | .135 | .154 |
| Shopping/ Errands | -.030 | .044 | .158 | .139 | -.014 | -.009 | -.055 |

* $p < .05$, ** $p < .01$

*n = 92*

Table 15.

*Part 2: Regression analyses predicting later time point academic engagement from earlier time point academic engagement, correlated traits, and daily activities from T1.*

| | Academic Engagement | | |
|---|---|---|---|
| | Predicting T3 from T2 | Predicting T2 from T1 | Predicting T3 from T1 |
| Beta coefficients | | | |
| Academic Engagement | .674** | .708** | .703** |
| Neuroticism | .016 | -.019 | .007 |
| Extraversion | .145 | .128* | .185 |
| Openness to experience | .019 | -.007 | -.023 |
| Agreeableness | .112 | -.093 | .110 |
| Conscientiousness | .205 | .027 | -.112 |
| Class | .205 | .031 | .031 |
| Study | .227 | .115* | .128 |
| Sleep | .120 | -.018 | -.001 |
| Relax | .248 | .032 | .008 |
| Eat | .005 | -.044 | .096 |
| Partner | .140 | .036 | .035 |
| Exercise | -.156 | .040 | .002 |
| Model fit | | | |
| df | 23 | 173 | 80 |
| $R^2$ | .738 | .596 | .594 |
| Adjusted $R^2$ | .590 | .566 | .529 |
| F | 4.980** | 19.630** | 9.037** |

* p < .05, ** p < .01

Table 16.

*Part 2: Regression analyses predicting later time point social engagement from earlier time point social engagement, correlated traits, and daily activities from T1.*

| | Social Engagement | | |
|---|---|---|---|
| | Predicting T3 from T2 | Predicting T2 from T1 | Predicting T3 from T1 |
| Beta coefficients | | | |
| Social Engagement | .649** | .625** | .589** |
| Neuroticism | -.206 | -.036 | -.115 |
| Extraversion | .122 | .156** | .151 |
| Openness to experience | .037 | .054 | -.051 |
| Agreeableness | .124 | -.050 | .075 |
| Conscientiousness | -.182 | .007 | -.120 |
| Class | -.041 | .053 | -.020 |
| Relax | -.382** | .014 | -.023 |
| Partner | -.078 | .002 | -.032 |
| Exercise | -.039 | .077 | .095 |
| Friend | -.170 | -.096 | -.067 |
| Locomotion | -.015 | -.053 | .017 |
| Model fit | | | |
| df | 24 | 174 | 81 |
| $R^2$ | .752 | .578 | .465 |
| Adjusted $R^2$ | .628 | .549 | .386 |
| F | 6.074** | 19.848** | 5.869** |

* p < .05, ** p < .01

Table 17.

*Part 2: Multi level models predicting academic engagement from traits and daily activities.*

| | Unconditional Model | Time Only Model | Best fitting Model |
|---|---|---|---|
| **Fixed Effects** | | | |
| *Model for initial status* | | | |
| Intercept ($\gamma_{00}$) | .006 (.030) | .061(.042) | -.003(.037) |
| Level 1 variables | | | |
| Extraversion ($\gamma_{01}$) | - | - | .158 (.048)** |
| Openness ($\gamma_{02}$) | - | - | .349 (.04)** |
| Conscientiousness ($\gamma_{03}$) | - | - | .468 (.056)** |
| Time Studying ($\gamma_{04}$) | - | - | .333 (.139)* |
| Time in Class ($\gamma_{05}$) | - | - | .455 (.159)* |
| *Model for growth rate* | | | |
| Time ($\gamma_{10}$) | - | -.043(.023) | -.002 (.023) |
| Extraversion ($\gamma_{11}$) | - | - | .083 (.029)* |
| Openness ($\gamma_{12}$) | - | - | -.073 (.033)* |
| **Random effects** | | | |
| Var ($\mathbf{r_{ij}}$) = $\sigma^2$ | .398 | .155 | .131 |
| Person level | | | |
| Var ($\mathbf{u_{0j}}$) = $\tau_{00}$ | .663 | .361 | .224 |
| Var ($\mathbf{u_{1j}}$) = $\tau_{11}$ | - | .002 | .000 |
| Modeled variance | | | |
| Proportion of variance in $\mathbf{r_{ij}}$ explained | - | .611 | .155 |
| Proportion of variance in $\mathbf{u_{0j}}$ explained | - | .456 | .380 |
| ICC | .736 | .844 | .746 |

Model 1: 923 observations nested in 639 participants, Model 2: 849 observations nested in 626 participants.

Table 18.

*Part 2: Multi level models predicting social engagement from traits and daily activities*.

| | Unconditional Model | Time Only Model | Best fitting Model |
|---|---|---|---|
| **Fixed Effects** | | | |
| *Model for initial status* | | | |
| Intercept ($\gamma_{00}$) | .023 (.040) | .060(.060) | .004(.054) |
| Level 1 variables | | | |
| Extraversion ($\gamma_{01}$) | - | - | .400(.042)** |
| Openness ($\gamma_{02}$) | - | - | .210(.042)** |
| Time with Friend ($\gamma_{03}$) | - | | 1.342(.314)** |
| Time doing Housework ($\gamma_{04}$) | - | - | -1.489 (.562)** |
| Time spent Exercising ($\gamma_{05}$) | - | - | 2.007 (.747)** |
| *Model for growth rate* | | | |
| Time ($\gamma_{10}$) | - | -.029(.034) | .000(.035) |
| **Random effects** | | | |
| Var ($\mathbf{r}_{ij}$)= $\sigma^2$ | .587 | .237 | .233 |
| Person level | | | |
| Var ($\mathbf{u}_{0j}$) = $\tau_{00}$ | .870 | .729 | .591 |
| Var ($\mathbf{u}_{1j}$) = $\tau_{11}$ | - | .046 | .049 |
| Modeled variance | | | |
| Proportion of variance in $\mathbf{r}_{ij}$ explained | | .596 | .017 |
| Proportion of variance in $\mathbf{u}_{0j}$ explained | | .162 | .189 |
| ICC | .687 | .905 | .752 |

Model 1 and 2: 916 observations nested in 632 participants, Model 3: 847 observations nested in 642 participants.

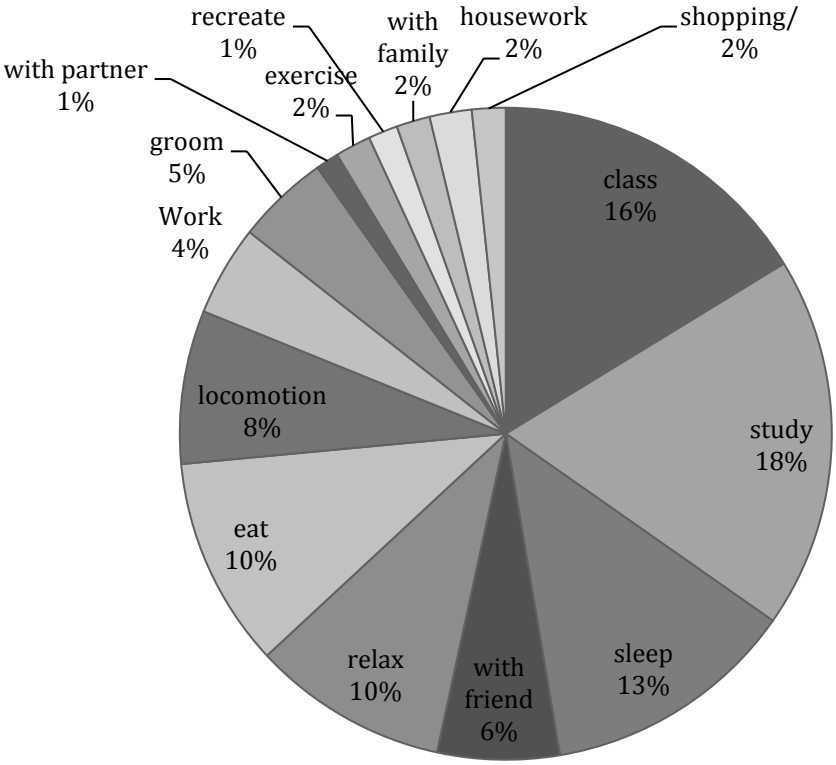


*Figure 1. Mean proportion of time students spend on each daily activity at T1.*

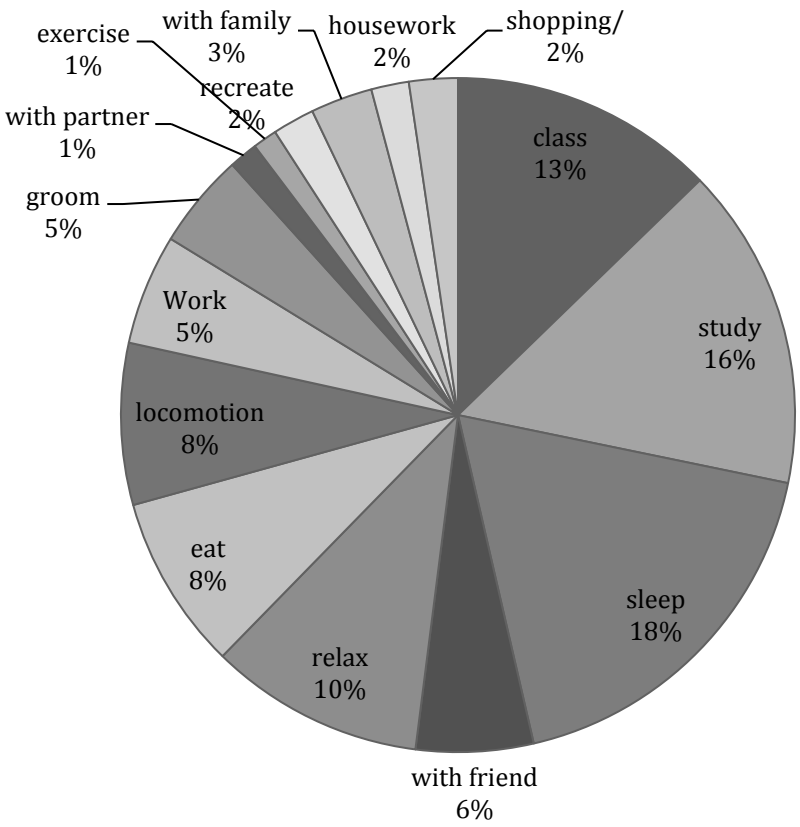


*Figure 2. Mean proportion of time students spend on each daily activity at T2.*

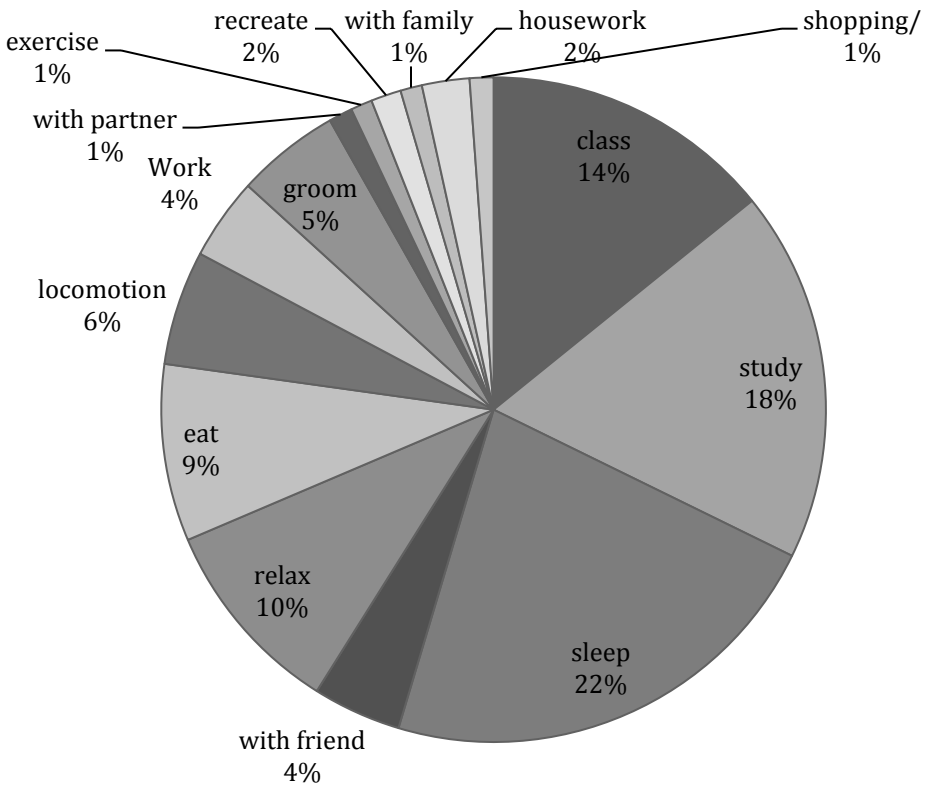


*Figure 3. Mean proportion of time students spend on each daily activity at T3*

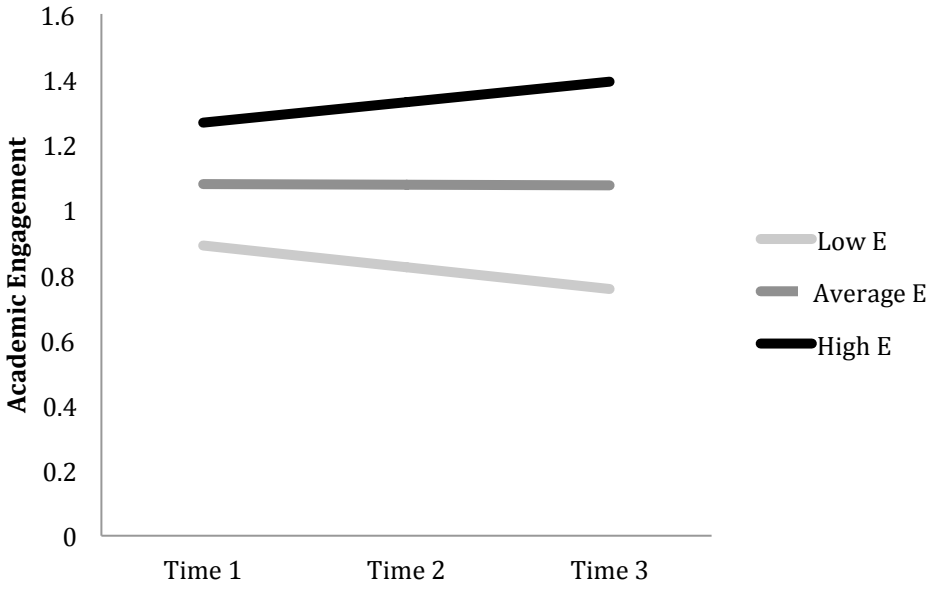


*Figure 4. Cross- level interaction between extraversion and time predicting academic engagement.*

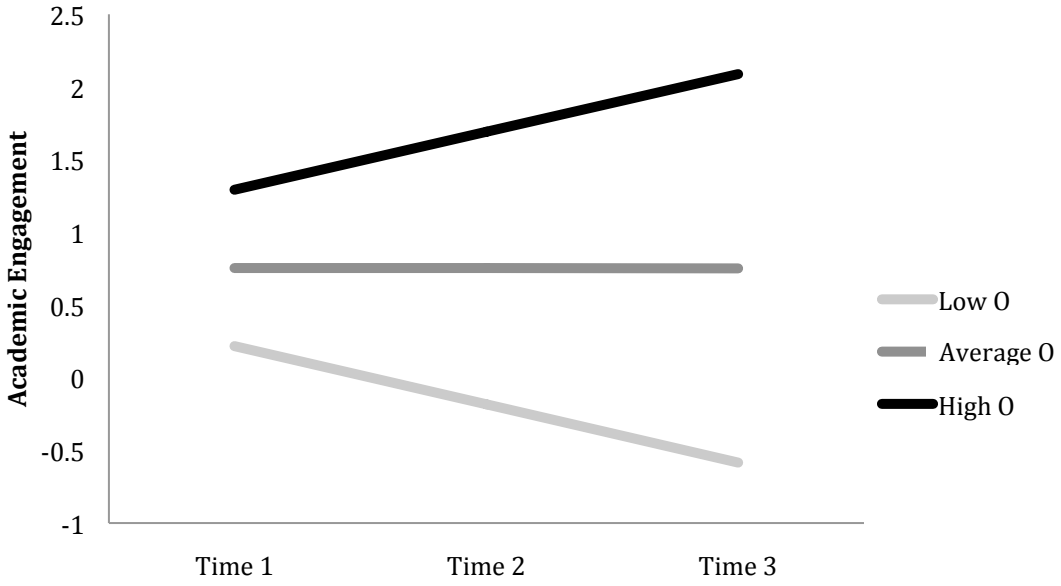


*Figure 5. Cross- level interaction between openness and time predicting academic engagement.*

## Appendices

Appendix A

Social Engagement Measure

*How frequently do you:*

| Never | Rarely | Occasionally | Somewhat Often | Often | Very Often |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |

1. Socialize with the same group of UCR students.
2. Initiated a conversation with a UCR student you did not know.
3. Volunteered on campus.
4. Attend a social event on campus.
5. Spend time with friends on campus.
6. Socialize with various groups of UCR students.
7. Participate in a club or organization on campus.
8. *Have trouble finding a good place to hang out with friends at UCR.
9. Have a meal with a friend (or friends).
10. Have a serious conversation with other UCR students.
11. Attend an off campus event with UCR friends.

**Score:**

To scoring the SES, sum the number scores in the response choice sets and average the total score by the total number of items. Item 8 is a reverse item. Use the reverse score key to replace the number scores. Use the replaced scores in the sum and average calculation. Reverse item score key: 1=6, 2=5, 3=4, 4=3, 5=2, 6=1

*Removed for Part 2 analyses

Appendix B

**Demographic Information Form**

Please answer these questions about yourself:

1. UCR Student ID: _____

1. Age:_____

2. Month of birth: _____

3. Sex: _____Male _____Female

4. Ethnicity: _____
(Please Print)

5. Class: ____ Freshman ____ Sophomore ____ Junior ____ Senior

6. What is your major (if you have not selected one yet type "I do not know")?_____
(Please Print)

7. What is your UCR Grade-Point Average? _____

8. What is your ACT/SAT score?_____

Appendix C

**Daily Activities Measure**

Instructions: We are interested in what you did earlier today. For each hour we ask you to report: **"What were you doing?"** Write a brief sentence describing your activities during each hour. Please do not make anything up. If you cannot remember or would rather not say what you were doing, write "forgot" or "rather not say."

"**Activity Category**"

Please pick the category from the "List of Activities" numbered from 1- 18 below that best summarizes the activity you engaged in during that hour, and write the number in the box. If you were engaged in more than one activity, please select the primary one.

**List of Activities**:

1. In class
2. Studying
3. Sleeping
4. Activity with friend
5. Relaxation
6. Eating
7. Locomotion (on the way to somewhere)
8. Work
9. Grooming
10. Activity with romantic partner
11. Exercise
12. Shopping/ errant
13. Recreation
14. Activity with family
15. Housework/chores
16. Forgot
17. Rather not say
18. Other

**Appendix C (continued)**

**“Who were you with?”**

Don’t use names here, just labels like “friend” or “classmate.”

“**Where were you?”**

Provide a location description, e.g., “at home”, “in class.”

**“How much were you enjoying the activity?"**

Rate as:

1. It was not enjoyable

2. It was somewhat enjoyable

3. It was very enjoyable

**“How often do you typically engage in the activity?”**

Rate as:

1. Rarely

2. Not often (about once or twice a month)

3. Often (about once a week)

4. Quite often (about 4-5 times a week)

5. Very often (daily)

Appendix D

**Big Five Inventory (BFI) -44**

Here are a number of characteristics that may or may not apply to you. For example, do you agree that you are someone who likes to spend time with others? Please write a number next to each statement to indicate the extent to which you agree or disagree with that statement.

| Disagree Strongly | Disagree a little | Neither agree nor disagree | Agree a little | Agree Strongly |
|---|---|---|---|---|

I see Myself as Someone Who..__

1. Is talkative
2. Tends to find fault with others
3. Does a thorough job
4. Is depressed, blue
5. Is original, comes up with new ideas
6. Is reserved
7. Is helpful and unselfish with others
8. Can be somewhat careless
9. Is relaxed, handles stress well
10. Is curious about many different things
11. Is full of energy
12. Starts quarrels with others
13. Is a reliable worker
14. Can be tense
15. Is ingenious, a deep thinker
16. Generates a lot of enthusiasm
17. Has a forgiving nature
18. Tends to be disorganized
19. Worries a lot
20. Has an active imagination
21. Tends to be quiet
22. Is generally trusting
23. Tends to be lazy
24. Is emotionally stable, not easily upset

Appendix D (continued)

25. Is inventive
26. Has an assertive personality
27. Can be cold and aloof
28. Perseveres until the task is finished
29. Can be moody
30. Values artistic, aesthetic experiences
31. Is sometimes shy, inhibited
32. Is considerate and kind to almost everyone
33. Does things efficiently
34. Remains calm in tense situations
35. Prefers work that is routine
36. Is outgoing, sociable
37. Is sometimes rude to others
38. Makes plans and follows through with them
39. Gets nervous easily
40. Likes to reflect, play with ideas
41. Has few artistic interests
42. Likes to cooperate with others
43. Is easily distracted
44. Is sophisticated in art, music, or literature

Appendix E

**Academic Engagement Scale**

| Never | Rarely | Occasionally | Somewhat Often | Often | Very Often |
|---|---|---|---|---|---|

Please indicate **how frequently** you engage in these activities.

1. Turn in a course assignment late.
2. Go to class without completing the assigned readings.
3. Go to class unprepared.
4. Skip class.
5. Raise your standard for acceptable effort due to the high standards of a faculty member.
6. Extensively revise a paper at least once before submitting it to be graded.
7. Seek academic help from an instructor or tutor when needed.
8. Work on class projects or study as a group with other classmates outside of class.
9. Help a classmate better understand the course material when studying together.
10. Communicate with a faculty member by email or in person.
11. Talk with the instructor outside of class about issues and concepts derived from a course.
12. Interact with faculty during lecture class sessions.
13. Work with a faculty member on an activity other than coursework (e.g., student organization, campus committee, cultural activity).
14. Contribute to a class discussion.
15. Bring up ideas or concepts from different courses during class discussions.
16. Ask a well thought out question in class.
17. Find a course so interesting that you did more work than was required.
18. Choose challenging courses, when possible, even though you might lower your GPA by doing so.
19. Make a class presentation.
20. Have a class in which the professor knows or learns your name.
21. Complete all or most of your assigned reading eventually by the end of the quarter.
22. Take a leadership role in a group activity.
23. Talk to friends or family about activities or ideas from a class you have taken.
24. Stay involved in a subject after a class ended.

Table $F_1$.

*Part 2: Daily activities correlations T1.*

| | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. | 12. | 13. | 14. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Class | - | | | | | | | | | | | | | |
| 2. Study | -.038 | - | | | | | | | | | | | | |
| 3. Sleep | -.329** | -.156** | - | | | | | | | | | | | |
| 4. Friend | -.039 | -.158** | .008 | - | | | | | | | | | | |
| 5. Relax | -.144** | -.245** | -.050 | .017 | - | | | | | | | | | |
| 6. Eat | -.013 | -.022 | -.028 | -.158** | -.050 | - | | | | | | | | |
| 7. Locomotion | -.009 | -.163** | -.209** | -.165** | -.041 | -.071 | - | | | | | | | |
| 8. Work | -.120** | -.235** | -.146** | -.135** | -.095* | -.170* | -.016 | - | | | | | | |
| 9. Groom | -.097* | -.123** | -.033 | -.021 | -.103** | -.029 | .012 | .043 | - | | | | | |
| 10. Partner | -.103** | -.097* | .024 | -.047 | -.052 | -.071 | .028 | -.010 | -.040 | - | | | | |
| 11. Exercise | -.010 | .003 | -.059 | -.060 | -.063 | .101* | -.115** | -.012 | -.007 | -.043 | _ | | | |
| 12. Recreate | -.095* | -.097* | .037 | -.038 | -.117** | -.013 | -.074 | -.031 | -.009 | .044 | -.050 | - | | |
| 13. Family | -.203** | -.140** | -.076 | -.105** | -.006 | -.069 | .100* | .015 | .041 | -.013 | -.087* | -.037 | - | |
| 14. Housework | -.198** | -.063 | -.003 | -.066 | .007 | -.018 | -.035 | -.078* | -.060 | -.038 | -.021 | .044 | .109** | - |
| 15. Shopping/ Errands | -.253** | -.113** | .046 | -.056 | .014 | .064 | -.017 | -.016 | .024 | .076 | -.029 | -.057 | .102* | .087* |

* $p < .05$, ** $p < .01$

*n = 635*

Table $F_2$.

*Part 2: Daily activities correlations T2.*

| | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. | 12. | 13. | 14. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Class | - | | | | | | | | | | | | | |
| 2. Study | -.013 | - | | | | | | | | | | | | |
| 3. Sleep | -.289** | -.061 | - | | | | | | | | | | | |
| 4. Friend | -.142 | -.227** | -.004 | - | | | | | | | | | | |
| 5. Relax | -.133 | -.189* | -.037 | -.068 | - | | | | | | | | | |
| 6. Eat | -.062 | .065 | -.065 | -.205* | .029 | - | | | | | | | | |
| 7. Locomotion | .077 | -.215* | -.321** | .016 | .051 | -.209* | - | | | | | | | |
| 8. Work | -.005 | -.250** | -.192* | -.073 | -.131 | -.297** | .070 | - | | | | | | |
| 9. Groom | .136 | -.008 | -.055 | -.029 | -.075 | .025 | -.102 | -.083 | - | | | | | |
| 10. Partner | -.130 | -.074 | -.108 | -.036 | .095 | .072 | -.058 | .009 | -.070 | - | | | | |
| 11. Exercise | .118 | .153 | .022 | -.089 | -.188* | .013 | -.026 | -.061 | -.134 | .063 | - | | | |
| 12. Recreate | -.138 | -.218* | .003 | -.080 | -.078 | -.035 | .098 | .072 | -.086 | -.012 | -.060 | - | | |
| 13. Family | -.286** | -.206* | .119 | -.047 | .047 | .096 | -.070 | -.153 | -.052 | -.057 | -.149 | -.038 | - | |
| 14. Housework | -.276** | -.184* | .069 | .028 | .042 | .054 | .009 | -.078 | -.047 | -.029 | -.076 | .046 | .232** | - |
| 15. Shopping/ Errands | -.196* | -.140 | -.090 | -.005 | -.138 | .056 | -.006 | -.039 | .155 | .023 | -.068 | .018 | .109 | .064 |

* $p < .05$, ** $p < .01$.
*n = 136*

Table $F_3$.

*Part 2: Daily activities correlations T3.*

| | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. | 12. | 13. | 14. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Class | - | | | | | | | | | | | | | |
| 2. Study | .087 | - | | | | | | | | | | | | |
| 3. Sleep | -.132 | -.398** | - | | | | | | | | | | | |
| 4. Friend | -.040 | -.021 | .091 | - | | | | | | | | | | |
| 5. Relax | -.071 | -.338** | .040 | -.203* | - | | | | | | | | | |
| 6. Eat | .185 | -.107 | .043 | .067 | -.084 | - | | | | | | | | |
| 7. Locomotion | -.085 | -.158 | -.114 | -.051 | .011 | -.297** | - | | | | | | | |
| 8. Work | -.305** | -.045 | -.058 | -.144 | -.184 | -.171 | -.048 | - | | | | | | |
| 9. Groom | -.116 | -.179 | -.053 | -.098 | -.028 | .092 | .071 | .082 | - | | | | | |
| 10. Partner | -.098 | -.161 | -.056 | -.062 | .009 | -.020 | -.038 | -.079 | -.024 | - | | | | |
| 11. Exercise | -.043 | -.006 | .017 | -.052 | -.130 | -.061 | .047 | -.075 | .103 | -.082 | - | | | |
| 12. Recreate | -.032 | -.077 | -.115 | -.140 | -.111 | -.103 | .145 | -.057 | .036 | .111 | .114 | - | | |
| 13. Family | -.140 | -.141 | -.105 | -.048 | -.065 | .001 | -.046 | .004 | -.003 | -.050 | -.069 | .029 | - | |
| 14. Housework | -.191 | -.084 | -.042 | -.100 | -.131 | -.148 | .012 | -.104 | -.088 | .180 | .002 | -.054 | -.072 | - |
| 15. Shopping/ Errands | -.168 | -.100 | -.036 | .015 | -.072 | .054 | .074 | -.059 | .030 | .083 | -.128 | -.017 | -.061 | .057 |

* $p < .05$, ** $p < .01$.
*n = 95*

Appendix G

**Regression models with daily activities from the previous time point**

The below analyses were done to examine how traits from T1 and daily activities and engagement from the previous time points predict engagement at a later time point.

**Academic Engagement.** In Table $G_1$ academic engagement was regressed on academic engagement from the previous time point as well as personality traits from T1, and those daily activities that were significantly correlated to academic engagement at the same earlier time point. In all three combinations of time point, academic engagement from the previous time point was the strongest independent predictor of later academic engagement.

**Social Engagement.** Similarly in Table $G_2$, social engagement was regressed on social engagement from the previous time point as well as personality traits from T1, and those daily activities that were significantly correlated to social engagement at the same earlier time point. Same as with academic engagement, social engagement from the previous time point in all three combinations of time point was the strongest independent predictor of later social engagement.

Table $G_1$.

*Part 2: Regression analyses predicting later time point academic engagement from earlier time point academic engagement using significantly correlated traits at T1, and daily activities from the earlier time point.*

| | Academic Engagement | | |
|---|---|---|---|
| | Predicting T3 from T2 | Predicting T2 from T1 | Predicting T3 from T1 |
| Beta coefficients | | | |
| Academic Engagement | .745** | .708** | .703** |
| N | .108 | -.019 | .007 |
| E | .201 | .128* | .185 |
| O | -.109 | -.007 | -.023 |
| A | .079 | -.93 | .110 |
| C | .126 | .027 | -.112 |
| Class | - | .031 | .031 |
| Study | - | .115* | .128 |
| Sleep | - | -.018 | -.001 |
| Relax | .056 | .032 | .008 |
| Eat | - | -.044 | .096 |
| Partner | .148 | .036 | .035 |
| Exercise | - | .040 | .002 |
| Shop/ Errands | -.200 | - | - |
| Model fit | | | |
| df | 28 | 173 | 80 |
| R | .838 | .772 | .771 |
| Adjusted $R^2$ | .598 | .566 | .529 |
| F | 6.793** | 19.630** | 9.037** |

* p < .05, ** p < .01

Table $G_2$.

*Part 2: Regression analyses predicting later time point social engagement from earlier time point social engagement using significantly correlated traits at T1, and daily activities from the earlier time point.*

| | Social Engagement | | |
|---|---|---|---|
| | Predicting T3 from T2 | Predicting T2 from T1 | Predicting T3 from T1 |
| Beta Coefficients | | | |
| Social Engagement | .625** | .625** | .589** |
| N | -.161 | -.036 | -.115 |
| E | .198 | .156** | .151 |
| O | -.046 | .054 | -.051 |
| A | .067 | -.050 | .075 |
| C | -.064 | .007 | -.120 |
| Class | - | .053 | -.020 |
| Relax | - | .014 | -.023 |
| Partner | - | .002 | -.032 |
| Exercise | .098 | .077 | .095 |
| Friend | .018 | -.096 | -.067 |
| Locomotion | - | -.053 | ,017 |
| Model fit | | | |
| df | 27 | 174 | 81 |
| R | .798 | .760 | .682 |
| Adjusted $R^2$ | .529 | .549 | .386 |
| F | 6.748** | 19.848** | 5.869** |

* p < .05, ** p < .01

Appendix H

**Personality Trait Consistency**

In order to more accurately determine whether personality traits should be included in the multi- level model/ growth model as time varying or not varying variables, paired samples t- tests comparing each trait from one time point to the same trait at every other time point was done. T- statistics for three pairs of variables for each trait were calculated. Specifically, in Table H, there was no statistically significant change in neuroticism in any of the time point combinations, and the effect sizes were all small. Similarly, there was no statistically significant change in extraversion between T1 to T2 and T2 to T3 time point combinations. The effect sizes for each of those two pairs were small, and for the second pair comparison, T2-T3, the 95% confidence interval of the lower and upper mean differences essentially does not cross zero. There was a statistically significant difference in extraversion between T1 and T3, and the effect size of this difference is of almost medium strength. There were not any statistically significant changes in openness between any of the time point groupings, though the effect size for the pair T1- T3 is noteworthy. Finally, we can see there are not any statistically significant pair differences in agreeableness and conscientiousness, respectively, and the effect sizes of the mean differences are rather low.

Table H.

*Trait paired samples t- tests comparing T1 to T2, T2 to T3, and T1 to T3.*

| | | T1 | | T2 | | T3 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | df | Mean | SD | Mean | SD | Mean | SD | t | Lower mean dif. 95% CI | Upper mean dif. 95% CI | d |
| Neuroticism | | | | | | | | | | | |
| T1- T2 | 135 | 3.157 | .708 | 3.114 | .687 | - | - | 1.031 | -.039 | .125 | .177 |
| T2- T3 | 35 | - | - | 3.096 | .757 | 3.065 | .746 | .424 | -.117 | .179 | .143 |
| T1-T3 | 95 | 3.092 | .780 | - | - | 3.126 | .735 | -.548 | -.154 | .087 | .112 |
| Extraversion | | | | | | | | | | | |
| T1- T2 | 135 | 3.136 | .785 | 3.064 | .769 | - | - | 1.966 | -.000 | .145 | .338 |
| T2- T3 | 35 | - | - | 2.902 | .884 | 2.943 | .885 | -.633 | -.171 | .089 | .214 |
| T1- T3 | 95 | 3.036 | .837 | - | - | 2.922 | .829 | 2.444* | .021 | .205 | .502 |
| Openness | | | | | | | | | | | |
| T1- T2 | 135 | 3.551 | .785 | 3.136 | .609 | - | - | -.394 | -.079 | .053 | .068 |
| T2- T3 | 35 | - | - | 3.608 | .496 | 3.618 | .559 | -.170 | -.126 | .106 | .057 |
| T1-T3 | 95 | 3.485 | .564 | - | - | 3.441 | .564 | 1.130 | -.033 | .121 | .232 |
| Agreeableness | | | | | | | | | | | |
| T1- T2 | 135 | 3.822 | .567 | 3.858 | .533 | - | - | -1.049 | -.105 | .032 | .181 |
| T2- T3 | 35 | - | - | 3.920 | .526 | 3.906 | .633 | .185 | -.132 | .159 | .063 |
| T1-T3 | 95 | 3.858 | .616 | - | - | 3.855 | .643 | .046 | -.109 | .114 | .009 |
| Conscientiousness | | | | | | | | | | | |
| T1- T2 | 135 | 3.543 | .667 | 3.520 | .665 | - | - | .711 | -.040 | .086 | .122 |
| T2- T3 | 35 | - | - | 3.556 | .690 | 3.534 | .716 | .355 | -.101 | .144 | .120 |
| T1-T3 | 95 | 3.540 | .736 | - | - | 3.517 | .740 | .426 | -.087 | .135 | .087 |

* $p < .05$, ** $p < .01$

Table I.

*Study 2: Paired samples t-tests for academic and social engagement comparing T1 to T2, T2 to T3, and T1 to T3.*

| | | T1 | | T2 | | T3 | | | 95% Mean Dif. CI | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | df | Mean | SD | Mean | SD | Mean | SD | t | Lower | Upper | d |
| Academic | | | | | | | | | | | |
| T1-T2 | 188 | 3.657 | .786 | 3.600 | .800 | - | - | 1.503 | -.019 | .143 | .219 |
| T2- T3 | 36 | - | - | 3.453 | .725 | 3.493 | .784 | -.466 | -.216 | .135 | .155 |
| T1- T3 | 94 | 3.509 | .683 | - | - | 3.439 | .804 | 1.249 | -.0417 | .183 | .258 |
| Social | | | | | | | | | | | |
| T1- T2 | 188 | 3.620 | 1.093 | 3.560 | 1.104 | - | - | 1.009 | -.057 | .176 | .147 |
| T2- T3 | 36 | - | - | 3.324 | .978 | 3.358 | .997 | -.286 | -.272 | .205 | .095 |
| T1- T3 | 94 | 3.541 | 1.048 | - | - | 3.514 | 1.087 | .289 | -.158 | .212 | .060 |

* $p < .05$, ** $p < .01$.