

**SYNERGISTIC INTEGRATION: BELIEF IN FREE WILL & A SENSE OF PURPOSE
FOR COLLEGE STUDENTS**

A Thesis

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By

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ABSTRACT

Intellectual development, academic success, and creating a positive psychological base are likely outcomes for college students who believe in free will and have a sense of purpose. The current study examined the correlation between these two psychology terms that have existed in isolation; a sense of purpose (purpose exploration and/or purpose commitment) and a belief in free will. It employed statistical correlation methods, and used the Revised Youth Purpose Survey (Bundick et al., 2006), and the Free Will and Determinism Scale (FAD) (Paulhus & Margesson, 1994) scales. The sample of students (N=364; 73.47% female, 26.53% males) ranged in age from 18-31, and were from a Predominately White institution in the Northeast. Results suggested that there is a correlation between purpose commitment and a belief in free will. This will be used as a preliminary study to further explore what possible mechanisms could alter that relationship between the constructs.

Keywords: Purpose Commitment, Purpose Exploration, Belief in Free Will, College Students, Academic Success, Meaning Making, Agency

BIOGRAPHICAL SKETCH

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I dedicate this to the future.

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TABLE OF CONTENTS

LIST OF FIGURES.....	vii
LIST OF TABLES.....	viii
INTRODUCTION.....	1
REVIEW OF THE LITERATURE.....	4
Belief in Free Will.....	4
Benefits of Belief in Free Will.....	5
Sense of Purpose.....	5
Benefits of Purpose Exploration.....	7
Purpose Commitment.....	8
The Relationship between Belief in Free Will and Purpose Commitment.....	10
Participants.....	14
Procedures.....	15
Statistical Methods.....	16
Results.....	19
DISCUSSION.....	21
Potential Limitations.....	23
Future Implications.....	25
Conclusion.....	31
APPENDIX A SURVEY INSTRUMENTS.....	34
APPENDIX B TABLES & FIGURES.....	37
REFERENCES.....	44

LIST OF FIGURES

Figure 1. Correlation Matrix: Sense of Purpose & Belief in Free Will.....	41
Figure 2. Correlation Matrix: Construct Factors.....	41
Figure 3. Sense of Purpose Eigen Values (Scree Plot).....	42
Figure 4. Belief in Free Will Eigen Values (Scree Plot).....	42
Figure 5. Structural Equations Model.....	43

LIST OF TABLES

Table 1. Study Demographics.....	37
Table 2. Component Loading Factors of Sense of Purpose.....	38
Table 3. Component Loading Factors of Belief in Free Will.....	39
Table 4. Covariance Summary of Latent Factors.....	39
Table 5. Descriptive Statistics (Mean and Standard Deviation) of Constructs.....	40

INTRODUCTION

This study will investigate how purpose exploration and/or purpose commitment correlates with a belief in free will. In this paper, a sense of purpose is defined as— “a central, self-organizing life aim that organizes and stimulates goals, manages behaviors, and provides a sense of meaning,” that guides individuals as they make micro and macro decisions (McKnight & Kashdan’s, 2009, p. 242), and belief in free will is characterized as—the possibility that a person could do more than one possible act in a given situation (Baumeister, 2010). This thesis will report on an exploratory factor analysis examining the gap in the literature between the two psychological constructs among college students. Although these constructs have not been previously shown to be related in prior research, each of them has been individually aligned with similar positive outcomes. I hypothesize this study will predict a positive relationship between these two constructs—particularly between purpose commitment and belief in free will— and this study will situate the results within the context of broader literature concerning college student access, retention and success. This study is designed as a preliminary analysis to motivate the development of a more empirically precise hypothesis to be tested in future work.

Establishing evidence for a positive relationship between purpose commitment and a belief in free will might institute a positive emotional framework for college students, as well as for the institution, especially if such a framework was previously nonexistent. And with the current increase in university enrollment, researchers should begin to navigate the possible relationship that exists between the two constructs: belief in free will and sense of purpose. According to the National Center for Education Statistics (2017) undergraduate college student enrollment is anticipated to increase from 17.0 million to 19.3 million students, which will be a 14% enrollment spike between 2015 and 2026; female student enrollment is expected to grow from 9.5 million to 11.0 million students, which will result in a 16% increase, and male student

enrollment is estimated to increase from 7.5 million to 8.3 million students, which will result in a 11% male student enrollment increase. The central goal for many students is to become the next world-renowned professional in their discourse. And institutions are experiencing an influx of more diverse student populations: underrepresented minority students, first-gen, transgender, non-able bodied, undocumented, low-income, veterans, and neuro-diverse, all of whom are chasing the American educational dream, and they arrive in the academy with more baggage than a freshman or transfer student on move-in day. Clearly every college student's personal difficulties impact their perception of choice. Disadvantages shift a student's confidence in their ability to respond to a situation, and in their ability to make meaning out of those experiences. And these complications can mobilize and/or force students into immobilization due to their beliefs about their own sense of purpose throughout their education. Individual complications tend to multiply across smaller communities and become larger scale complications for more students on campus. And college students are, more often than not, wanting to understand the "why"—the reason that precedes the experience, and/or the reason that creates the complication.

Currently many colleges are facing challenges dealing with their campus climate. These issues stem from students inability to understand and acknowledge their peers experiences; especially when they are significantly different than their own in the same community (e.g. legacy student vs. first-gen student). Many students are dealing with conscience and unconscious biases on a daily basis. In recent years, there has been a growing amount of literature focusing on the negative impacts of this type of covert discrimination, otherwise known as "micro aggressions" (Nadal et.al., 2014, p. 461). As college students knowingly and/or unknowingly commit micro-aggressions, they most likely do so from a negative psychological base. I would argue that this adverse psychological foundation is related to their lack of understanding of the

overlap between their sense of purpose and belief in free will. “Following broaden-and-build theory (Fredrickson, 2001), individuals have greater psychological and cognitive resources at their disposal when coming from a positive emotional base” (Hill et. al., 2018, p. 143).

Furthermore, this relationship and theory could be applied to an institutions’ overall vision.

Not only can this research assist with college students’ understanding of their own choice and purpose, but also it could offer insight about the institution as a whole. Every organization has a mission statement, which could be called their sense of purpose. This mission comes from upper level administration making decisions they see fit for the growth and development of the institution and the student body. Across the country we can see that there is a huge gap between institutions sense of purpose, and the collective students’ sense of purpose; however, with less alienating discussions these terms could be aligned. If institutions make the choice to engage students in conversation on identifying a sense of purpose, then students and the institution can begin to change the dialogue around the two constructs. Just as Vaccaro said in 2018, purpose was not just about deciding a career; it was about doing something meaningful in one’s life (p. 41), and this could apply to college mission and value statements. Hence, this research could be important to understanding the dynamics between the two constructs, and how that relationship could psychologically transform college students and university communities across the world.

LITERATURE REVIEW

Belief in Free Will

I believe absolutely in my own free will and my own power to accomplish - and that is the belief that moves mountains. -Jean Webster

A belief in free will generally refers to “when one chooses one’s own actions and determine one’s own outcomes” (Aarts & Van den Bos, 2011; Bergner & Ramon, 2013; Mele, 2006; Stillman & Baumeister, 2010). Moreover free will can be defined as the “ability to make a choice while being reasonably free of coercion” (Monroe et.al, 2017, p. 192). Having the cognitive ability to choose is a human based trait that separates us from all other species. A belief in free will develops over time through our cognitive understanding and cultured environment. Cognitive understanding suggests that when we believe in free will and recognize its possibilities and contributions to positive outcomes, then it is easier to believe we utilize it again in a new circumstance. “There are aspects of our concept of choice that are culturally universal, and other aspects that are highly culturally variable” (Kushnir, 2012, p. 195). Choice is both driven by and driven within culture.

Many of the choices we make are prescribed by our cultural beliefs; so much so, they don’t appear like conscious individual choices. For example, a Muslim college student hanging out with friends in the dining hall claims he can’t eat pork due to his faith; however, other college students would articulate that it is his individual choice to consume or not consume pork. Each culture we experience impacts how we perceive choice, and each impacts the moments in which we can enact or are prohibited to enact that choice. As explained in a TED Talk, Dr. Sheena Iyengar asserted that: “though all humans share a basic need and desire for choice, we do

not all perceive choice in the same experiences or to the same extent; the individual, situational, and cultural differences in beliefs about choice strongly suggest that learning, and in particular social learning, plays a critical role in how this concept is constructed over time” (TED, 2010, 12:07). This continual process of deciphering immediate choices serves as a predictor of how we might determine future choices. Studies also suggest that “children are not born with a concept of choice, at least not one that functions like adults’, further supporting the notion that the concept of choice must be learned” (Kushnir, 2012, p. 194.). With each choice we may receive a benefit and then ultimately use this benefit as a measuring stick for whether or not we have successfully made the correct choice. More often than not, an opportunity for growth comes from the multiple choices we repetitively make.

Benefits of a Belief in Free Will

A college student who maintains a belief in free will may receive multiple benefits since they are required to make several critical decisions. College is often the first time students are able to make decisions for themselves, and the ability to choose is a crucial component of intellectual and psychological development. Several studies suggest that having choices contributes to an adaptive cognitive social adjustment (e.g. Leotti, Iyengar, & Ochsner, 2010; Ryan & Deci, 2000 & Kushnir, 2012, p. 194). There are multiple pathways to imagine a future for oneself, particularly for those seeking educational development.

In addition, a belief in free will has shown positive correlations with the college student experience, particularly, in regards to academic achievements; “belief in free will predicted positive implications for real-life academic performance, showing that those who held stronger beliefs in free will performed better on academic tasks and achieved better course grades

throughout an academic semester” (Feldman et al., 2016, p. 382). Conversely, for college students a belief in free will could cultivate a sense of autonomy. College students enter the academy with a honed set of beliefs, and various skill sets, and it is the job of the academy to challenge, celebrate, and encourage those beliefs across many different platforms. Those who believe in free will demonstrate better workplace performance than those who do not (Stillman et. al., 2010, p. 47). Succeeding in college is similar to succeeding in a job, both require performance and commitment. Therefore a college students’ job performance could clearly be impacted and transformed if he or she held a belief in free will. Other researchers have found that a belief in free will has been very significant in behaviors such as; helping, caring, volunteering and co-existing in a space. “Four studies provided evidence that belief in free will contributes to feelings of gratitude” (Mackenzie et. al., 2014, p. 1433). As suggested by Vohs and Schooler (2008), that “belief in free will is a valuable support for prosocial behavior” (Baumeister et. al., 2009, p. 267). Maybe further research could determine if a belief in free will serves as a predictor of campus climate.

Sense of Purpose

The two most important days in your life are the day you are born and the day you find out why.” —Mark Twain.

According to Ryff (1989), a sense of purpose is characterized by “goals, intentions, and a sense of direction, all of which contributes to the feeling that life is meaningful” (Windsor et. al., 2015, p. 975). A sense of purpose offers college students the ability to move forward in the direction that seems most true to their particular self in that particular moment. In the literature

researchers such as Steger (2006) use the construct “meaning in life” interchangeably with a sense of purpose construct. Baumeister viewed purpose as “one of the four needs of meaning, and to define meaning in life, an individual must have a sense of purpose” (Vaccaro, 2018, p. 37). Meaning making is nearly impossible without knowing ones sense of purpose, and meaning making is essential to a college students’ psychological development. In a *Man’s Search for Meaning* (1959), Dr. Victor Frankl, a Holocaust survivor, draws upon the words of Fredrick Nietzsche: "He who has a why to live for can bear almost any how" (p. 109), thus implying that a claimed sense of purpose serves as an internal reoccurring catalyst for action despite obstacles and struggles. That motivation can be expressed within two forms of purpose: (1) the sense that I need to develop myself in order to manifest pleasure, (2) the sense to uplift the community, as asserted by Cotton-Bronk in 2009. Finding and committing to a sense purpose arises at various times of an individual’s life. Older individuals are more likely to have a more established sense of purpose in contrast to younger individuals who more often than not are still searching for a sense of purpose (Steger et al., 2009). This exploration for younger individuals often requires that they must try out several identities and purposes before they can commit to one.

Benefits of Purpose Exploration:

Every individual has to go through an exploration phase when they are looking to commit to a purpose. Life satisfaction has been shown to be a predictive measure for those in purpose exploration during adolescence and emerging adulthood vs those who are searching in middle to adult life stages (Cotton-Bronk et al., 2009). Some individuals are able to arrive at a sense of well-being from the various experiences of purpose exploration. Many researchers continue to go back and forth about the minimal benefits of purpose exploration. Consequently, there seems to

be three essential benefits in the purpose exploration process; fundamental human motivation (Maddi, 1970 & Steger et., al 2006), open-mindedness, and curiosity (Steger & Kashdan, 2008 & DeZutter et al., 2016). A sense of purpose helps create opportunities and enhances motivation for identity development. Erickson (1968) reported that purpose helps young people successfully traverse and resolve their identity ‘crises.’ For example, most college students go through several identity formations during their four years, as they ask themselves who they are, and how they fit or belong within the identity of the groups they associate with. Moreover, all three benefits assist individuals in their transition from purpose exploration to purpose commitment.

Benefits of Having Purpose Commitment

Having a sense of purpose significantly impacts students’ ability to persevere. Individuals that report a higher committed sense of purpose tend to be grittier (Hill et al., 2016). If a college student has strong fortitude to set and meet goals they can exercise their ability to create an identity that gives them unlimited opportunities. Cotton Bronk calls attention to Dr. Victor Frankl’s assertion that hardships can be overcome when individuals have a more significant understanding of their sense of purpose (Cotton-Bronk et al. 2009). This understanding can be formed by a college student’s past, future, and present academic experiences. Personal and environmental factors can affect an individual’s logic around their self-development. Sense of purpose, is a construct persuaded by psychological and social influences and it can often be intentionally manifested and enriched (Burrow & Hill, 2011; Ryff, 2014; Turner, 2017). Sense of purpose is not static, it is not immobile, and it can be shifted by both outside environmental influences and/or also transformed through cognitivity or mindset manipulation (growth /fixed mindset).

Identifying and maintaining a sense of purpose is the key to growth and development, and individuals who tend to do so live happier and healthier lives than those who do not claim a sense of purpose. Seligman's (2011) definition of well-being (PERMA: positive emotion, engagement (being in the flow), relationships, meaning (purpose in life), and accomplishment) is directly derived from Aristotle's philosophical inquiry around flourishing, and a study reported those individuals who reported purpose commitment sustained a more positive correlation with PERMA than those who reported they were in purpose exploration. Additionally, people who practice having a sense of purpose are less reactive, calmer, and more cognizant of themselves and their surrounding environments. Deriving a sense of purpose in life can confer several benefits, both short-term and long-term (Hill et al., 2010). Establishing a sense of purpose contributes to physical and emotional wellbeing.

Preventative health and well-being measures (i.e. health check-ups, exercise) are taken more frequently by individuals who have a sense of purpose in life (Holahan et al. 2008; Kim et al. 2014; Holahan et al. 2011 & Turner, 2017). There are numerous studies that advocate that a higher sense of purpose in life correlates with: a stronger sense of identity, less signs of psychological stress, and health patterns. A study completed in 2015 revealed that individuals that suffered from sleep apnea were more likely to have a negative understanding of a sense of purpose in life (Turner, 2017). Sleep is a very important factor as it relates to well-being, especially for college students. Even though students tend to boast and brag about the lack of sleep they are getting a night, while being fueled by energy drink, caffeine and alcohol, a lack of sleep is detrimental to their health. Combining alcohol and energy drinks may also be particularly detrimental for sleep. Studies conducting cross section research has concluded that caffeine intake alone paralleled with individuals consuming mixtures of alcohol and caffeine

correlate with a higher rate of sleeping complications and the quality of the sleep individuals are receiving (Peacock, Bruno, & Martin, 2012; Peacock, A., Bruno, R., & Martin, F. H., 2012; Woolsey, Waigandt, & Beck, 2010; Patrick et. al., 2018). Purpose commitment can help individuals stay on track in order to establish a healthier life style.

Regardless of the amount of sense of purpose a college student claims or ignores, sense of purpose clearly impacts their psychological state of being. Research has shown that a lack of sense of purpose in life leads to depression and the inability to make alternative choices, and higher levels of aggression are normally correlated with those that do not practice their belief in free (Baumeister, Masicampo, & De Wall, 2009 & Seto, et.al, 2016). Aggression could be interpreted as the outward expression of depression. On the other hand, both sense of purpose and belief in free will have been individually correlated with positive wellbeing.

The Relationship between a Belief in Free Will and Purpose Commitment

I hypothesize that purpose commitment is more likely to correlate with a belief in free will as opposed to purpose exploration. I believe this to be true because decision making (choice) is consistent when there is commitment; whereas, exploration often deploys the possibility of incongruent outcomes. McKnight & Kashdan's definition of a sense of purpose highlights the importance of "self-organization," which contains Sobel & Kushnir's assertion that "casual learning", which involves the complex network of relations among many life events (Sobel & Kushnir, 2006, p. 411). Furthermore, in order to consistently shape a self, one must understand how choices are not made in isolation of each other, rather how each one is affected by the previous and/or impacting the next one (A can affect B which can affect C). Purpose commitment creates causal learning opportunities and impacts belief in free will. Given the

outcomes associated with each construct, it is reasonable to assume that a belief in free will and purpose commitment constructs will be positively correlated among college students. Several lines of work converge to support this prediction.

First, Feldman (2016) concluded that having a strong belief in free will was a positive predictor of academic achievement and success. Moreover, purpose commitment has shown a great deal of connection to student academic success. “In studies with adolescents, purpose has been correlated with hope (Burrow & Hill, 2011), resiliency (Masten & Reed, 2002), positive affect (Burrow & Hill, 2011), academic achievement (Pizzolato et al., 2011), civic development (Malin et al., 2015), and life satisfaction” (Bronk et al., 2009 & Vaccaro et. al., 2018, p. 38). These correlations play particularly important roles in students’ access, success and retention. Students learning outcomes are significantly related to their ability to define, organize, and perceive the choices they must make in order to accomplish goals. Openly discussing and promoting a sense of purpose in life can have positive effects on college student’s educational learning outcomes (Vaccaro et. al., 2018). Academic success is a more probable outcome for college students who have both purpose commitment and a belief in free will.

Second, managing and or developing goals also aligns the two constructs; purpose commitment and a belief in free will. One component of choice is having the ability to allocate energy within intervals of short or long terms commitments. Goal focused can be labeled as a commitment to all choices that align and manifest one’s sense of purpose. Allocating one’s time and energy and choosing to support those efforts towards one’s overarching goals stems from that individual’s sense of purpose (Hill et. al, 2018). The college students who believe they have a sense of purpose in life and a belief in free will subsequently have an internal drive for obtaining their goals no matter the short or long term obstacles. “A qualitative study with college

students showed that purpose development has inherently tied to positive identity development, relationships, and decision-making processes” (Welkener, Bowsher, 2012 & Vaccaro et. al., 2018, p. 38). Those collective decision making processes derive from the individual choices that we all make when are developing and working towards our sense of purpose. The pattern of goal setting exists in both Stillman’s (2016) understanding of a belief in free will and Yeager’s interpretation of purpose commitment (Yeager & Brundick, 2009). Because goal setting exists in both constructs, college students have the opportunity to realize the benefits of the correlation.

Third, the connection between the two constructs is established through managing behaviors or actions. “Others have indicated the importance of everyday decision making and action (Maddi, 1970) or of self-transcendence (e.g., Allport, 1961; Seligman, 2002) in the creation of meaning” (Steger et al., 2006, p. 80). Maintaining a sense of purpose in life offers an individual the ability to categorize, develop and manage behaviors externally; therefore, it also offers an opportunity to choose or select a particular outcome. “A sense of purpose predicted developmentally important outcomes such as a positive self-image and reduced propensity for delinquency” (Hill, 2016, p. 243). When a student holds a positive self-image, then that understanding directly relates to their ability to recognize how each choice impacts a desired outcome. Beliefs in free will create possibilities of freedom to choose and claim one’s purpose. With this freedom, one can choose to align a behavior that will lead towards the goal or away from the desired outcome. Managing behaviors implies the ability to decipher positive from negative ones, thus choosing one over the other and prescribing meaning to that selected choice. “Acting otherwise,” then as defined by Kushnir can be viably compared to managing or reconfiguring behaviors, as well as committing to one’s sense of purpose.

Fourth, the constructs; a sense of purpose and a belief in free will meet at the intersection of integration — “the process in which students decide what is central to their sense of purpose and integrated those interests, perspectives, passions, activities, and goals into their evolving narrative of self” (Vaccaro et. al., 2018, p.44). Through this process students can begin to internalize and build upon their hopes, and dreams. They can begin to make choices based upon their lived experiences and hopefully understand that every choice comes with a lesson, as they strive to create and recreate their sense of purpose.

Fifth, both constructs also include an element of community advancement. Bronk’s (2009) defined a sense of purpose as containing two distinct purpose concentrations; self-development and communal development. Similarly, Baumeister (2009) stated that a belief in free will assists an individual with their prosocial behavior traits. Together the constructs show an interwoven connection to assist, help and/or develop others. Thus, asserting that the two constructs do not only function in isolation.

Many times college students are attempting to live through their parent’s sense of purpose lens, which inevitably will disrupt the relationship between the two constructs. For example, James a first-year student had immigrant parents who wanted him to be a doctor or a lawyer; however, music was his drive. James struggled to make choices in order to become a doctor; he made choices around music because that’s where he found meaningfulness. Therefore his choices and his parent’s desired sense of purpose for him did not align, thus causing him academic stress, issues with goal setting, an inability to manage behaviors, and a lack of integration. James wanted to appease his parents’ desire for him to become a doctor, but he had other desires, and so he struggled with purpose commitment. Yet, when James committed to his music all of his choices and decisions catered to his acoustic declaration. Once he made the

choice to talk with his parents and made the choice to change his major, his constructs began to align, and his college experience began to drastically improve. James enacted a belief in free will, (as asserted by Kushnir's definition: the ability to "act otherwise"), this included James' perception of subsequent choices which empowered him to perceive his own ability to repeatedly select those choices despite parental constraint (Kane, 2002, 2011 & Feldman, 2016). From this example one can infer that when the two constructs align, college students are more likely to be successful. Purpose commitment and a belief in free will are linked by academic achievement, goal development, managing behaviors and integration. All of which create a strong foundation for a college student's success.

Participants

Participants were (364, 21 had incomplete data) 343 undergraduate college students (73.47% female, 26.53% males), ranging from 18 to 31 ($M=19.73$; $SD=1.52$). The ethnic demographic of the sample were; (52.75%) White, (20.88%) Asian, (9.43%) African-American, (4.40%) Latino, (3.02%) Latino-White, (1.10%) Asian-White, (1.10%) African-White, (0.55%) African-Asian, (0.55%) Asian-Latino, (0.27%) African-Latino and (6.04%) did not identify their ethnicity. Students ranged from the assortment of undergraduate levels; (16.03%) freshman, (35.49%) sophomore, (24.49%) juniors, and (23.91%) seniors. In addition, participants were from different educational studies; (0.6%) Architecture & Planning, (1.7%) Human ecology, (2.9%) Engineering, (3.5%) Industrial & Labor Relations, (16.03%) Agriculture & Life Science, (29.2%) Arts & Sciences and (45.8%) Hotel Administration (See Appendix B: Table 1 for all demographic information collected).

Study Design

Procedures

The objective of this study was to examine the relationship between the two psychological constructs: sense of purpose (purpose commitment and purpose exploration) and belief in free will. Undergraduate students from a mid-sized, private university in the Northeast United States were recruited into an online survey, via through student community list-serves. Data was captured by psychological scales replicated in the institutions Qualtrics Software. Participants were asked to complete the Revised Youth Purpose Scale and the Free Will and Determinism Scale. The students received partial course credit as compensation for full completion of the survey scales. Students were asked to complete the scales completely, honestly and to the best of their abilities. All qualified students were at least 18 years of age and were registered as full-time students in an undergraduate degree program within the institution at time of enrollment. Data collection was carried out over the course of an academic spring semester resulting in a convenience sample of 364 individuals. Participants were asked demographic questions such as; age, gender, race/ethnicity, class standing, and college within the university. Psychological sense of purpose (purpose commitment & purpose exploration) and belief in free will were ascertained from two distinguished metric scales.

Psychological sense of purpose (purpose commitment and purpose exploration) was measured by using the Revised Youth Purpose Study, a 20- item scale (Bundick et. al., 2006) created by several members from the Stanford Center on Adolescence. The authors selected the Revised Youth Survey because it directly measures a sense of purpose and it has been validated as a noteworthy scale in other similar adolescent data collections (Bronk et al., 2009; Burrow, O'Dell, & Hill, 2010, Burrow & Hill, 2011). The test consists of two sub scales; a

5-item scale in which individuals enact purpose exploration (questions 1 - 5) and a 15-item measure that highlights purpose commitment (questions 6 – 20). Sample items of purpose exploration include “I am searching for meaning in my life” and “I am always searching for something that makes my life feel significant.” Sample items of purpose commitment are as follows: “I do many things that give my life meaning” and “I have a purpose in my life that reflects who I am.” Participants answered survey scales using a seven-point Likert scale; 1 (strongly disagree) through 7 (strongly agree). See Appendix A for survey instruments.

Belief in free will was measured by using the Free Will subscale of the Free Will and Determinism Scale (FAD), a 7-item scale (Paulhus & Margesson, 1994) designed to measure free will through a series of questions relating to accountability and agency. The authors selected the (FAD) because of its significance in psychological literature examining a belief in free will (Stillman et.al, 2010). The scale consists of seven questions pertaining to participant’s belief in free will. Sample items of belief in free will included “people can overcome any obstacles if they truly want to”, and “strength of mind can always overcome the body's desires.” Participants reported their results on five point Likert scale; 1 (strongly disagree) through 5 (strongly agree). The authors summed the items, with greater scores representing higher beliefs in free will.

Statistical Methods

All statistical computations for the present study were completed using R Statistical Software, Version 3.4.1 (R Core Team, 2017). Descriptive statistics for the collected data in the present study are presented as frequencies and percentages or means and standard deviations (See Appendix B: Table 4). Responses from study participants who did not completely answer the psychological survey items were eradicated from subsequent analysis.

94.2% of the collected data was retained after, non-complete study participants were removed (n=343). First, an unadjusted analysis was conducted to observe the pairwise Pearson correlations between each of the survey constructs relating to sense of purpose (purpose commitment and purpose exploration) and belief in free will to determine the strength and direction of study responses particularly noting any potential patterns in the observed item variables. In addition, an exploratory factor analysis (EFA) was then conducted to inform the covariance structure underlying these items. As noted in Muthen and Muthen, 2018, EFA “is used to determine the number of continuous latent variables that are needed to explain the correlations among a set of observed variables” (Muthen & Muthen, 2018, p. 43). Screeplots of Eigen values were visually examined alongside other supplementary tests which were used to decipher the amount of potential latent factors that were significant between the constructs. Then component loadings were then examined to further determine if a correlation exists between the two constructs. Individual survey items that contained high magnitude loadings for each latent factor under orthogonal (VARIMAX) rotation were assumed to load to their respective factors independently. The covariance between these latent constructs were computed to further test the present study’s hypothesis that there is a positive correlation between the two psychological constructs; purpose commitment and the belief in free will. The predicted latent factors and supported evidence of the constructs recognized correlations were then assessed through confirmatory factor analysis.

A Confirmatory factor analysis (CFA) was performed to cross reference that data explained in the previous EFA; to test whether the observed variables specified to load onto each significant latent factor, and each estimated latent factor, adequately measure the visible covariance structures. CFA utilizes a structural equation model, which estimates a pre-

determined number of latent factors and indicates which latent factor each of the observed variables load into (Epskamp & Simon, 2017) and “CFA is almost always used during the process of scale development to examine the latent structure of a test instrument (e.g. a questionnaire”(Brown, 2015, p. 1). Moreover, the CFA assumes a causal relationship among the latent factors and approximates the associated covariance parameters using a maximum likelihood method. A chi-square test was implemented to assess whether the proposed model fit is a noteworthy enhancement over a null model in explaining the covariance structure seen in the collected data from the present study.

An additional analysis was run to compare the fit of two alternative, plausible factor structures to the model proposed above. The above model fit was tested against the competing model which aligned a single-factor solution. Such a model would suggest there is a general psychological construct that explains the covariance structure in the survey item responses and it is mathematically equivalent to restricting the correlations between latent factors to be equal to one. Furthermore, the compressed model was compared to the original model utilizing a nested chi-square test to determine if the fit of the full model is statistically significantly better than the proposed, reduced model, even with the assessment of additional set parameters. The same number of latent factors are overserved in both the original model and the second alternative model, with equivalent indication of loadings from the observed variables but with the latent factors defined to be orthogonal to each other. Statistically, this independent assumption is equivalent to restricting zero correlation between the latent factors, and this permits for direct testing of the present studies hypothesis that a correlation exists between the psychological constructs for purpose commitment and a belief in free will.

Within the three highlighted structural equation models (SEM), the individual survey items were treated as continuous variables with working independent assumptions on their residual covariance structures. Any correlation observed between these explanatory variables is assumed to be noticeable within the computed latent factors. CFA models were computed using maximum likelihood. The latent factors were (standardized to have mean equal to zero and variance equal to one). Factanal function packages were used to construct the EFA, and the Lavaan package (Rosseel, 2012) was used to create the CFA model estimations.

Results

Study participant demographics have all been reported in Table 1 in Appendix A; As documented, the study sample (n = 343), the average age in students within this sample size was 20 years old. The majority of the participants in the present study were White (52.75%), female (73.47%), sophomores (35.49%), and enrolled in the School of Hotel Administration (45.77%). Compared to university-wide proportions the demographics for the present study are over represented in the convenience sample. The correlation matrix of the psychological constructs survey responses indicates a strong, positive correlation between the variables pertaining to purpose exploration (Purpose_1 – Purpose_5), purpose commitment (Purpose_6 – Purpose_20), and a belief in free will (FreeWill_1 – FreeWill_7). From observations of the matrix purpose exploration exhibit's weak, negative correlation with those pertaining to purpose commitment (Appendix B: Figure 1).

Explanatory factor analysis implies a three-factor solution, with two factors explaining 48.4% of the variability in the sense of purpose questions and one factor explaining 40.4% of the variability in the belief in free will questions. Screeplots graphically displayed

Eigenvalues for both sense of purpose and belief in free will (Appendix B: Figure 3). Four eigenvalues (6.87, 3.69, 1.76, and 1.10) are displayed in the screeplot for the sense of purpose questions. The four values have an absolute value greater than one, meeting the commonly-used threshold criterion for retention. The first two latent factors present a high proportion of variance explained, which does not improve significantly with the addition of factors three and four. The seven belief in free will variables produced one significant Eigen value (3.41) that is visible within the computed scree plot (Appendix B: Figure 4). A confirmatory factor analysis was done for the two significant factors (Eigen values) for the sense of purpose (6.87, 3.69) variables and one significant factor for the belief in free will variables (Eigen values 3.41). A structural equations model exhibited the first five sense of purpose items (purpose exploration) load onto factor 1, conversely the fifteen sense of purpose items (purpose commitment) load onto the factor 2 (Appendix B: Table 2), and the seven belief in free will items load onto factor 3 (Appendix B: Table 3). An additional factor correlation matrix provides a graphical display of the model results in Figure 2. All of the component loadings of the observed survey items onto their respective latent constructs were statistically significant (p -value < 0.0001) at a significance level of $\alpha = 0.05$. The standardized coefficients for these component loadings ranged from 0.320 to 0.927. The statistical framework implies that the three latent constructs defined in the SEM can summarize the variability in the observed psychological construct survey responses, pertaining to a sense of purpose (purpose commitment and purpose exploration) and a belief in free will.

The data shows that purpose commitment and a belief in free will are not independent of each other. The hypothesis that there is a positive relationship between purpose commitment and the belief in free will has been supported. The correlation shows the sense of

purpose constructs as ($M=3.5$, $SD=1$); and a belief in free will as ($M=3$, $SD=1$). Findings provide evidence that purpose commitment and a belief in free will have some correlation. These findings have been drawn through inferences on the correlations between the latent constructs estimated in the SEM (Appendix B: Table 4). Visibly within the table, one can observe there is a statistically significant correlation between purpose commitment and a belief in free will ($\rho = 0.404$, $p\text{-value} < 0.0001$). These proposed values would indicate that undergraduate students at this particular university with a higher purpose commitment generally also had a higher belief in free will. Statistically there was not enough evidence to suggest a positive correlation between purpose exploration and both purpose commitment and a belief in free will. The overall model fit was statistically significant when compared to a null model ($p\text{-value} < 0.0001$), with a non-normed fit index (Tucker-Lewis Index) of 0.784 and a root mean square error approximation equal to 0.094 (90% C.I. = (0.089, 0.100)). The proposed three-factor model allowing for correlations between the latent factors had a significantly better fit to the data than both the single-factor model ($\chi^2_{23} = 1,490.7$, $p\text{-value} < 0.0001$) and the three-factor model that restricted the sense of purpose and belief in free will constructs to be independent of each other ($\chi^2_{23} = 47.614$, $p\text{-value} < 0.0001$).

Discussion

The findings imply there is a positive correlation between the two constructs; belief in free will and purpose commitment. The statistical data suggests that the two constructs have some significant correlation. The researcher believes that agency could be the possible linkage between the two constructs present in this study. Although, the present study did not test for agency, the idea of agency seems to be present both in the literature on free will and the

literature on sense of purpose. The American Psychological Association defines agency as the drive to progress toward a goal, to have the authority to claim and commit to that goal, to resist immobility and work towards an objective (APA, 2018). It is not enough for a college student to believe that there are choices available to be made, but rather he or she has to believe that they have the power to select the choices and thus strategically impact long term goals. “To be able to make decisions effectively and enjoy the process of decision making and related outcomes, one must perceive that choices are available and that the self is capable and in charge of making a choice” (Baumeister, Sparks, Stillman & Vohs, 2008, Monroe & Malle, 2010 & Feldman, et. al., 2018, p. 306). Each time a student practices agency, they possibly might be recommitting to a sense of purpose. Thus repeated moments of agency could strengthen purpose commitment, and further research could measure this relationship. Adolescents who choose to enact goal related activities are more likely to report both a greater sense of purpose and agency (Bronk et al., 2009; Burrow et al., 2010, Hill et. al., 2013). Whether the goals are short or long, college students’ beliefs structures impact their ability to accomplish their purpose.

Beliefs are the foundation of an individual’s actions (Fishbein & Ajzen, 1975), and free will beliefs, which are culturally prescribed and communally developed also inspire movement toward long term and short term goals (Baumeister, 2008; Seligman et al., 2013 & Feldman, 2018). This movement requires bravery to select the most effective choice in order to solidify ones purpose commitment, and to evaluate decisions in pursuit of the larger desire. For example, Erikson suggested that a sense of purpose (commitment) corresponded to having “the courage to envisage and pursue valued goals uninhibited by the defeat of infantile fantasies, by guilt and by the foiling fear of punishment” (Erickson, 1964, p. 122). Envisage implies the act of imagining a possible future event, or desirability, and the pursuit of goals towards manifesting

that event inherently inhabits the act of choice—one cannot imagine and pursue without practicing choice—deciphering one behavior over another. In a 2015 study, (Seto et al., 2015, p. 248) stated: “the notion that our personal actions have led us to where we are today makes pivotal life events more significant and meaningful; the ability to imagine what might have been and embracing the notion of free will are both important components of the meaning making toolbox.” Seto’s assertion that the ability to imagine what might have been aligns with Erickson’s explanation of envisage. Furthermore, in what appears to be two independent constructs, in fact, synergy creates overlap.

Literature asserts that free will beliefs are a central component in the construct of agency, “and perceptions of agency have positive consequences for satisfaction, underlying people’s sense-making, search for meaning and purpose, true self-knowledge, and the attainment of higher well-being” (Crescioni, Baumeister, Ainsworth, Ent, & Lambert, 2015; Feldman & Chandrashekar, in press; Leotti, Iyengar, & Ochsner, 2010 & Feldman et. al. ,p. 305). In addition, identity commitment and agency are two significant factors connected to purpose commitment (Hill et. al., 2013). Therefore, the positive correlation found in this study implies that a beneficial college student experience—one in which he or she might claim agency—might arise from an understanding of the relationship between purpose commitment and a belief in free will.

Potential Limitations

Like all studies, this study comes with limitations. First, the data reported was collected from a self-reported questionnaire. Self-reporting could lead to result bias by the participants of the study. Second, the sample population size was not large enough compared to

the population of the institution, and this potentially reduced the statistical power necessary to distinguish differences between the two constructs (Burrow & Finley, 2004). Third, the data was composed as a convenience sample; collected at a private/public Ivy League PWI institution in the Northeast, where we could assume every student has an understanding of a belief in free will and a sense of purpose even if they cannot articulate what that sense of purpose is in the present moment. This could have provided skewed data collection for the average college student age population of 18 – 23 years old as compared to other students at other types of institutions. Could we assume that the data would provide different correlation results had the study been completed at a technical college? A Community College? A Historically Black College & University? A Tribal College? In addition, demographic variables were included in the data analysis. Fourth, since a majority of the participants were sophomores, maybe drawing more attention to the sophomore population could shine some light on the number of participants that completed the survey.

Research has shown that sophomores have the highest dropout rate across the board, discounting college freshman (Lipka, 2006; Tobolowsky, 2008). Maybe the reverse in the college trend can be observed from the data presented in the current study. “Educators should be interested in the sophomore year because this is the year in which students make many of the decisions that help them succeed in subsequent years, such as clarifying their sense of purpose, making major declarations, and narrowing their career options; while some may think that the national conversation about the sophomore year is simply another educational fad, discussion of sophomore issues actually dates back to 1956 when Freedman coined the phrase “sophomore slump”; he characterized the second year as one of student inertia and confusion, and contemporary educators note similar behaviors among today’s sophomores (Gansemer-Topf,

Stern, and Benjamin, 2007 & Tobolowsky, 2008, p. 60). Each of these limitations reveals the need for further examination between these two constructs. Aside from these caveats, the current study provides significant evidence suggesting the correlation between the two constructs; a belief in free will and a sense of purpose (purpose commitment).

Future Implications

Supported by the findings of this study, a positive relationship exists between the two psychological constructs: sense of purpose (purpose commitment) and belief in free will. Future research should try to identify and study the complex relations that and mechanism that holds the two constructs together.

First, researchers may want to run an exploratory correlation analysis to determine if such variables as gender, race, academic year and college major show any correlation in relation to a participant's sense of purpose and a belief in free will. These variables could provide future research with several different measurable outcomes in regards to the correlation between a belief in free will and purpose commitment. These results could provide insight into the various college experiences for students of different genders, races, academic years and college majors, which could all be influential on how colleges and universities shape the overall student experience.

Secondly, future research should question if adverse experience of college students shift the relationship between the two constructs. Early childhood adverse experiences include but are not limited to; difficult, stressful, or traumatic lived experiences (e.g., physical, sexual, or emotional abuse) over different occurrences and time spans (Wolitzky-Taylor et al., 2017). Literature reveals that lived adverse experiences have destructive outcomes for many individuals.

The continuous ordeals cause physical and mental strain. Adversity significantly negates a student's sense of purpose as well as their belief in free will at various times in their academic career. Research has revealed that negative effects of adversity increase as an individual ages (Hill et. al., 2018). For a majority of college students, I would argue that adversity causes erosion of the psyche. For example, research has reported that daily discrimination causes health concerns, especially for African Americans (Ong et. al., 2017). More college students could consider both their intentions and their impact each time they interact with both familiar and unfamiliar communities' thus possibly deterring discrimination both in real time and/or on-line in the social media world.

Thirdly, researchers should also consider both the adolescent and foster care populations which for the past few years have often been ignored by the academy. "Between 1973 and 2012 from the "top three" sociology (1.1%), demography (0.4%), economics (0.1%), political science (0.2%), and psychology (0.9%) journals included the phrase "foster care" in the full text" (Wildeman, 2014, p. 600). These populations who face more difficult challenges are not only forgotten by communities, but also are rarely on the Higher Education radar. Psychologists could ask: how do foster care adolescents understand purpose exploration and purpose commitment, and how do they practice their belief in free will? Numerous children in foster care have poor developmental, mental, and educational outcomes (Casey Family Programs, 2005; Children's Administrative Research, 2004); many of them struggle in their transition from foster care to young adulthood and will succumb to poor choices that will prevent them from obtaining an optimal level of health. (Bruskas, 2008, p.70). Future research should begin to look at how and when this population enacts choice with or without constraints, and the beliefs they hold about those choices. The literature has shown that there is a significant correlation between health and

purpose commitment, so how does this correlation coexist for adolescents currently in the foster care system, or those that have experienced living within the system. The population of foster care children significantly increases every year. In 1980, the number of foster care children was reported to be 302,000, and that number increased to 556,000 in 2000, and increased by 33.5% in 2004; with teenagers consisting of 30% of all foster care youth and upwards to 20,000 adolescents age out of foster care every year by their 18th birthday (Scannapieco, Connell-Carrick & Painter, 2007). This population often struggles with psychological concerns such as depression, anxiety, and/or substance abuse. In addition, scholars should begin to unpack how, if at all, these concerns shape or change the relationship between the constructs belief in free will and purpose commitment for foster care youth.

Fourth, researchers could examine how the combination of purpose commitment and belief in free will are actually foundational constructs that assist students as they strive to become more resilient. As a psychoanalytic construct, resilience has been defined as "... the dynamic capacity of an individual to modify his/her modal level of ego-control, in either direction as a function of the demand of characteristics of the environmental context" (Block & Block, 1980, p. 48). Leaders and activists often exhibit this ability to adapt within multiple environments. The association of belief of free will and purpose commitment can optimize the possible outcomes for an individual. In this understanding of resilience—the process by which individuals achieve adaptive functioning in the face of adversity—can reveal specific protective factors and the mechanisms through which they operate (Hines, 2005). When college students enact purpose commitment and free will in order to strengthen and practice the muscle of resilience. One important predictive factor of perseverance for long-term goals is the belief in free will (Li et. al., 2018). I would argue that a purpose commitment and the belief in free will

helps create the foundations of meaning making. Having the confidence and the ability to make meaning is what gives life resilience. A Japanese proverb explains it best; resilience is like bamboo, “the bamboo that bends is stronger than the oak that breaks” (Bali & Sharma, 2018, p. 73).

Fifth, research should also examine if there is a correlation with a belief in free will, sense of purpose and Greek affiliation on college campuses. The current study did not ask if students were members of Greek organizations. There are several factors that could be examined in the context of Greek life on college campuses across the nation. These things are as follows: (1) students that belong to Greek organizations often partake in higher rates of drug and alcohol use than those students without any Greek affiliations (McCabe et. al., 2018), (2) other research finds that Greek life members are more prone to hook up culture (Bartoli and Clark, 2006; Robinson et al., 2004; Scott-Sheldon et al., 2008; Sweeney, 2014a; Reling et. al., 2018), substance sexual victimization, physical intimidation, and increases levels of rape myth acceptance compared to their non-Greek peers (Bleecker and Murnen, 2005; Foubert et al., 2006; McMahan, 2010; Reling et. al., 2018), (3) the hazing culture that seems to be very present across the nation, the culture of tolerance and validation of hazing with in college Greek organizations (Iverson & Allen, 2004; Cimino, 2013). All of these concerns could incite more research to examine students with Greek affiliations and their experiences in beliefs of free will and sense of purpose. Currently, there is no literature inspecting Greek life and a belief in neither free will nor research looking at Greek Life and a sense of purpose.

Sixth, research should explore college athletes and their belief in free will and sense of purpose. The current study did not ask if students were a part of any collegiate athletic teams, but future research should investigate the relationship between the two constructs for college athletes

versus non college student athletes. Due to the rigor of being a collegiate student athlete, many college student athletes miss out on a lot of regular college student experiences; academic and extracurricular, shared by their non-athletic peers (Potuto & O'Hanlon, 2007). Similarly to Greek life, college athletes exhibit more instances of hazing and sexual victimization. In addition, several reach groups have reported on eating disorders facing college student athletes, which could cause lifelong psychiatric conditions (Quatromoni, 2017). Therefore, this type of medical condition could cause a disruption in a college student athlete's belief in free will and sense of purpose.

Seventh, most of this study has examined college students who have worked towards achieving their degree within a four year time frame while living on campus. However, future research could examine an often ignored population whom may also be working on completing their University degree: the incarcerated individual. Their belief in free will and sense of purpose could be radically altered by the experience of being imprisoned. Very few inmates are provided the access to pursue a college degree, and thus, when released find reintegration back into the community even more difficult (Deray, 2013). We can consider prisons to be modern day slavery and Section 1 of the 13th Amendment of the United States reads: "Neither slavery nor involuntary servitude, except as a punishment for crime whereof the party shall have been duly convicted, shall exist within the United States, or any place subject to their jurisdiction" (U.S. Const. amend. XIII). Further one cannot forget the historical pattern of intentionally restricting access to education for African Americans and slavery, Indigenous people and the Europeans, Japanese and Internment camps, and Jewish people and the Holocaust as a way of reducing autonomy—and thus removing the possibility of constructing free will and sense of purpose. There is a lack of education given to these enslaved groups and there is a lack of education given

to the current enslaved population in the prison system. Whether the college student is incarcerated or a traditional one, if their family history stems from any of these historical communities, that history may also impact their belief in free will and sense of purpose.

Finally, all of the future research implications mentioned above could contribute to the experience of derailment. Derailment is a feeling as though one's intended goals and sense of self have been re-routed (Burrow et. al, 2017). Although I have not specifically measured derailment, studies that have measured it reveal that a correlation exists between those who have a lower committed sense of purpose and the experience of derailment. If purpose commitment is significantly linked to belief in free will, and studies reveal that a lower sense of purpose commitment is correlated with experiences of derailment, future studies could explore how a decreased belief in free will may also be correlated with experiences of derailment.

Conclusion

Individually a sense of purpose (searching and commitment) and a belief in free will are both important psychological constructs. These two constructs can be crucial components of student's success. "In recent psychological literature, it has been argued that the greatest consensus in defining meaning has centered on two dimensions: coherence, or one's comprehension and sense made of life, and purpose, or one's core aims and aspirations for life" (Steger et al., 2006 & Martela & Steger, 2016, p. 522). Thus, asserting that students who practice purpose commitment and intentionally select choices that solidify that purpose can continually meet their short-term and/or long-term goals. For many college students having a belief in free will and purpose commitment assists them in the planning of their future goals and aspirations. "Because there is no universal meaning that can fit everyone's life (Frankl, 1965), each person must create meaning in his or her own life (Battista & Almond, 1973), whether through the pursuit of important goals (Klinger, 1977) or the development of a coherent life narrative (Kenyon, 2000; McAdams, 1993)"(Steger et. al., 2006). Therefore, all college students' paths to purpose commitment will be unique, and will require them to establish their own authority through choice.

The findings of the study indicate a significant correlation between the two constructs: a belief in free will and purpose commitment. The researcher emphasizes that the following areas: academic achievement, goal development, managing behaviors and integration may have an impact on the correlation of the two constructs. These four proposed areas contribute to the college student's potential to create agency. This present study seeks to enhance the literature surrounding the two psychological constructs, and can be used as a building block to investigate the significance of the relationship between them. It is this relationship that can potentially

impact student's access, success and retention, as well as to transform the climate on university campuses.

APPENDIX A: SURVEY INSTRUMENTS

Construct 1. Survey Instrument: Free Will and Determinism Scale (FAD)

+ _____ + _____ + _____ + _____ +
1 2 3 4 5
Strongly disagree Strongly agree

FAD (Belief in free will)

1. People have complete control over the decisions they make.
2. People must take full responsibility for any bad choices they make.
3. People can overcome any obstacles if they truly want to.
4. Criminals are totally responsible for the bad things they do.
5. People have complete free will.
6. People are always at fault for their bad behavior.
7. Strength of mind can always overcome the body's desires

Paulhus, D.L., & Carey, J. (2010). Measuring beliefs in free will and related constructs. *Journal of Personality Assessment*, under review.

Construct 2. Survey Instrument: Revised Youth Purpose Scale

Revised Youth Purpose Scale

1. I am searching for meaning in my life.
2. I am looking for someone that makes my life feel meaningful.
3. I am always looking to find my life's purpose.
4. I am seeking a purpose or mission for my life.
5. I am always searching for something that makes my life feel significant.
6. My life has a clear sense of purpose.
7. I have a good sense of what makes my life meaningful.
8. I have discovered a satisfying life purpose.
9. My life has no clear purpose.
10. I understand my life's meaning.
11. I do many things that give my life meaning.
12. I rarely do anything that feels purposeful to me.
13. I participate in one or more organizations that serve my purpose in life.
14. I have very few relationships that add meaning to my life.
15. I am always working toward accomplishing my most important goals in life.
16. I have a purpose in my life that reflects who I am.
17. I have a purpose in my life that says a lot about who I am.
18. The choices I make in my life rarely have anything to do with my purpose.
19. I have a life purpose that says a lot about the kind of person I am.
20. If you want to really understand me, you have to know my purpose in life.

**Bundick, M., Andrews, M., Jones, A., Mariano, J. M., Bronk, J. C., & Damon, W. (2006).
Revised Youth Purpose Survey. Unpublished instrument, Stanford Center on Adolescence, Stanford, CA.**

APPENDIX B: TABLES & FIGURES

Table 1. Demographic Statistics*Gender, Age, Class Standing, Race, and College Major of participants of the present study*

Demographics	Study Sample (n = 343)	University Proportions (%)	
Gender			
Female	252 (73.47%)		51.6%
Male	91 (26.53%)		48.4%
Age, yrs. (Mean = 19.73, SD = 1.52)			
18 yrs. old	63 (18.40%)		
19 yrs. old	108 (31.50%)	Under 18	1.5%
20 yrs. old	78 (22.70%)	18 – 19	28.7%
21 yrs. old	74 (21.60%)	20 – 21	31.3%
22 yrs. old	13 (3.80%)	22 – 24	16.1%
23 yrs. old	3 (0.90%)	25 – 29	14.5%
25 yrs. old	1 (0.30%)	30 – 34	5.0%
27 yrs. old	1 (0.30%)	35 +	3.0%
28 yrs. old	1 (0.30%)		
33 yrs. old	1 (0.30%)		
Class Standing			
Freshman	55 (16.03%)		
Sophomore	122 (35.57%)		
Junior	84 (24.49%)		
Senior	82 (23.91%)		
Race/Ethnicity			
White	192 (52.75%)		40.7%
African-American	34(9.43%)		6.0%
Latino/a	16 (4.40%)		12.1%
Asian-American	76 (20.88%)		18.0%
Latino/a-White	11 (3.02%)		
Asian & White	4 (1.10%)		
Asian-Latino/a	2 (0.55%)		
African-American & White	4 (1.10%)		
African-American & Latino/a	1 (0.27%)		
African-American & Asian	2 (0.55%)		
None Identified	22 (6.04%)		12.6%
College within the University			
Agriculture & Life Science	56 (16.33%)		
Engineering	10 (2.92%)		
Industrial & Labor Relations	12 (3.50%)		
Architecture & Planning	2 (0.58%)		
Hotel Administration	157 (45.77%)		
Arts & Sciences	100 (29.15)		
Human Ecology	6 (1.75)		
None Identified	21(6.03)		

University Proportions: <https://www.collegefactual.com/colleges/cornell-university/student-life/diversity/>

Table 2. Sense of Purpose Component Loadings

Component loadings of sense of purpose (exploration and commitment) factors in the present study.

Component Factors	Factor 1	Factor 2
Sense of Purpose		
Purpose Exploration 1	-0.104	0.761
Purpose Exploration 2		0.879
Purpose Exploration 3		0.879
Purpose Exploration 4		0.911
Purpose Exploration 5	-0.106	0.846
Purpose Commitment 6	0.752	
Purpose Commitment 7	0.760	
Purpose Commitment 8	0.785	-0.156
Purpose Commitment 9	0.598	-0.199
Purpose Commitment 10	0.556	-0.171
Purpose Commitment 11	0.687	
Purpose Commitment 12	0.403	-0.193
Purpose Commitment 13	0.508	
Purpose Commitment 14	0.303	
Purpose Commitment 15	0.522	
Purpose Commitment 16	0.850	
Purpose Commitment 17	0.865	
Purpose Commitment 18	0.389	-0.107
Purpose Commitment 19	0.819	
Purpose Commitment 20	0.393	0.244

*Any factors loading below .25 were omitted due to readability.

Table 3. Belief in Free Will Component Loadings*Component loadings of belief in free will factors in the present study.*

Component Factors	Factor 3
Belief in Free Will	
Belief in Free Will 1	0.689
Belief in Free Will 2	0.547
Belief in Free Will 3	0.594
Belief in Free Will 4	0.688
Belief in Free Will 5	0.652
Belief in Free Will 6	0.614
Belief in Free Will 7	0.652

Table 4. Covariance Summary*Covariance summary of latent factors in the present study.*

Covariance Summary	Covariance	Std. Err	Z-Value	p(> z)	Correlation
Latent Factors					
(Z2) purpose commitment ~ (Z3) belief in free will	0.255	0.042	5.345	<.001	0.404
(Z1) purpose exploration ~ (Z3) belief in free will	0.012	0.036	0.320	0.749	0.021
(Z1) purpose exploration ~ (Z2) purpose commitment	-0.076	0.039	-1.934	0.053	-0.120

Table 5. Descriptive Statistics

Mean and standard deviation of sense of purpose (purpose exploration and purpose commitment) belief in free will factors.

Construct Factors	Mean	Standard Deviation
Sense of Purpose		
Purpose Exploration 1	3.71	1.02
Purpose Exploration 2	3.60	1.13
Purpose Exploration 3	3.61	1.04
Purpose Exploration 4	3.59	1.03
Purpose Exploration 5	3.62	1.03
Purpose Commitment 6	3.58	0.96
Purpose Commitment 7	3.58	0.96
Purpose Commitment 8	3.25	1.03
Purpose Commitment 9	5.59	1.03
Purpose Commitment 10	3.04	0.95
Purpose Commitment 11	3.67	0.88
Purpose Commitment 12	5.79	0.98
Purpose Commitment 13	3.52	1.01
Purpose Commitment 14	5.94	1.04
Purpose Commitment 15	3.70	0.87
Purpose Commitment 16	3.62	0.89
Purpose Commitment 17	3.64	0.88
Purpose Commitment 18	5.66	0.95
Purpose Commitment 19	3.52	0.93
Purpose Commitment 20	3.11	1.02
Belief in Free Will 1	3.28	1.01
Belief in Free Will 2	3.72	0.86
Belief in Free Will 3	3.59	0.98
Belief in Free Will 4	3.03	0.98
Belief in Free Will 5	3.19	1.00
Belief in Free Will 6	2.84	0.91
Belief in Free Will 7	3.33	1.01

Figure 1. Correlation Matrix of Psychological Constructs

Correlation matrix of sense of purpose (exploration and commitment purpose) and belief in free will survey questions.

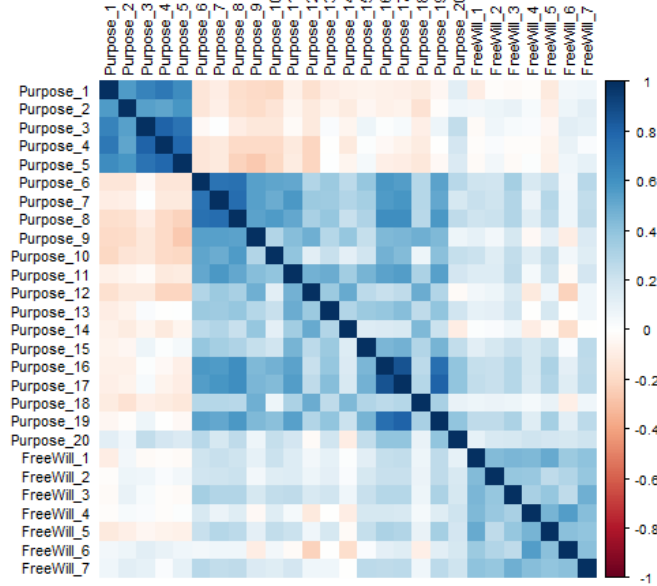


Figure 2. Correlation Matrix of Psychological Construct Factors

Correlation Matrix of sense of purpose factors (exploration and commitment purpose) and belief in free will factors.

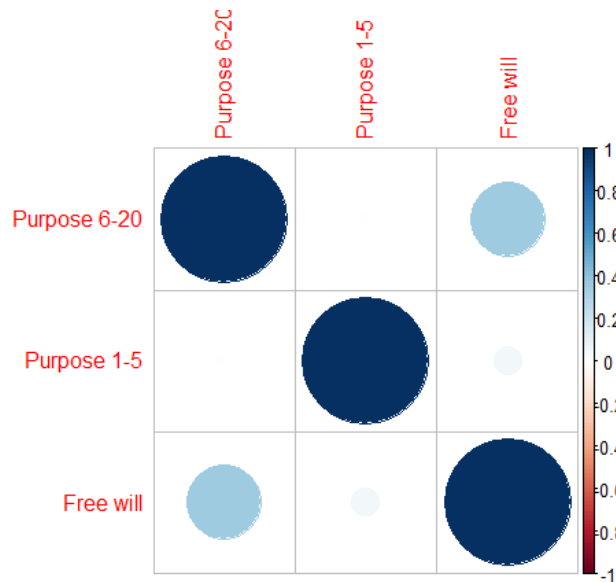


Figure 3. Sense of Purpose Eigen Values

Sense of purpose (exploration and commitment) Eigen values plot for the present study.

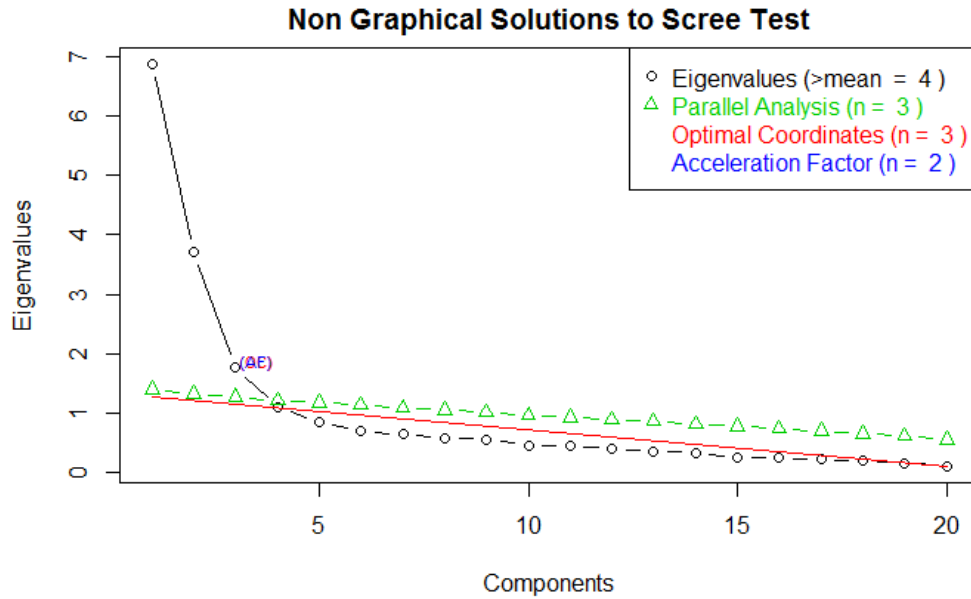


Figure 4. Belief in Free Will Eigen Values

Belief in free will Eigen values plot for the present study.

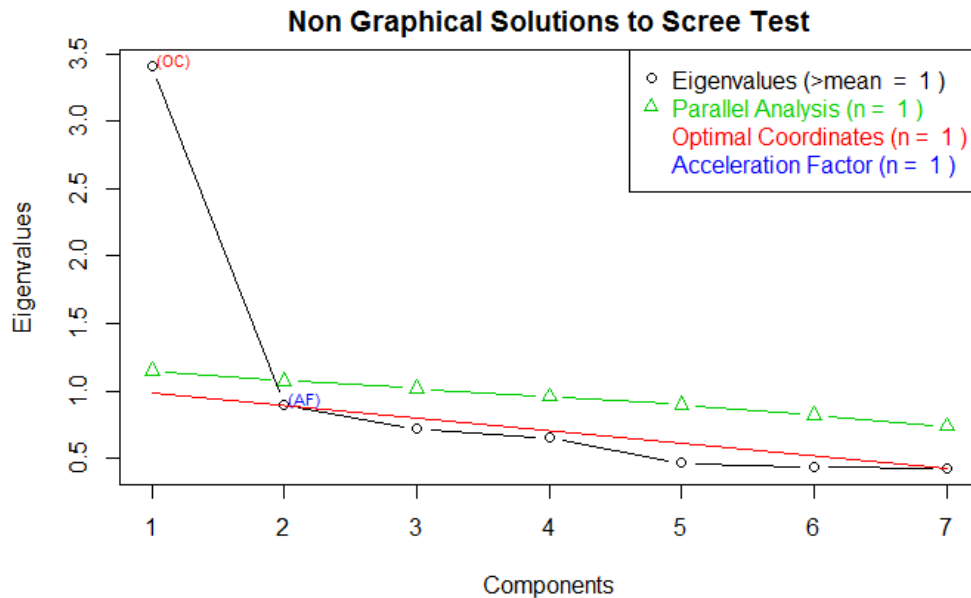
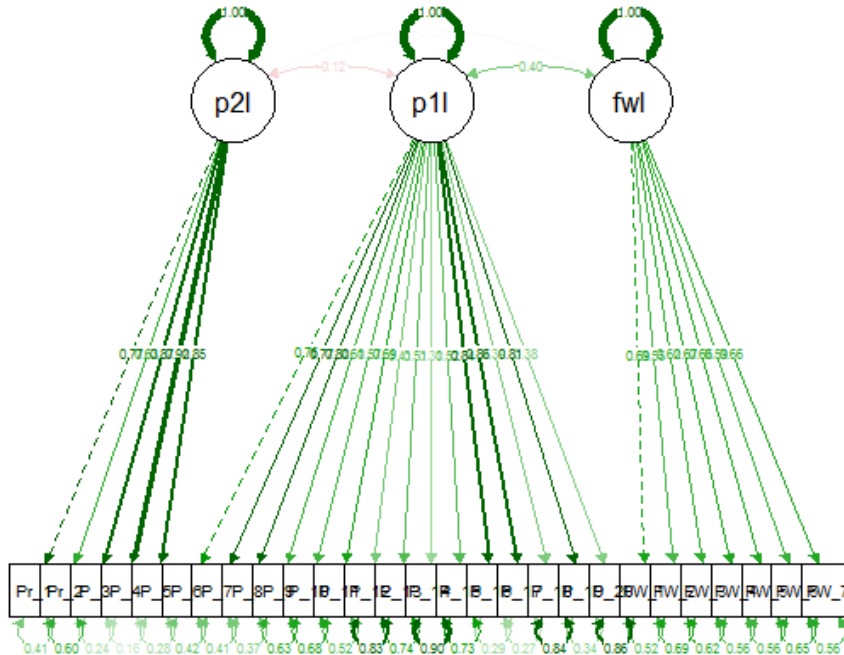


Figure 5. Structural Equation Model

Structural Equations Model for sense of purpose (exploration (p2l) and committed purpose (p1l) and a belief in free will(fwl).



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