



Starter or Joiner, Market or Socially-Oriented: Predicting Career Choice among Undergraduate Engineering and Business Students

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Paper ID #12600

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Abstract

The objective of this research is to understand the cognitive, motivational, behavioral influences that predict career choice among undergraduate engineering and business students. The sample ($n = 754$) was divided into two groups - students whose career choice was to “start” a business or organization after graduation and students whose career choice was to “join” an existing business or organization after graduation. An alternate division allowed separating the sample into those students who were interested in a “market oriented” (for-profit) career outcome and those students who were interested in a “socially oriented” (non-profit) career outcome. The theoretical framework used for modeling these groups was Social Cognitive Career Theory (SCCT). Logistic regression analysis was conducted using a multi-measure survey that assessed cognitive, motivational, behavioral influences.

Results show that students who are Starters tend to be “new seeking” and “iconoclastic”, and have higher “domain self-efficacy”, compared with students who are Joiners. Further, students who are interested in Socially Oriented career outcomes are more “socially altruistic,” and have a stronger sense of “personal morals” and a more hopeful future about their “quality of life” compared with their Market Oriented peers. Gender was an important predictor in both models with women more likely to be Joiners and more interested in Socially Oriented career outcomes than were men. Over one-third of engineering majors expressed a career choice that involved “starting something”; however, engineering majors were less likely to be Starters” than were business majors. Both majors had a low level of interest (only 9-13% of participants) in Socially Oriented career outcomes. Long-term educational implications of these findings are discussed.

Introduction

In the academic year of 2011-2012 U.S. postsecondary institutions conferred a total of 1.8 million Bachelor's degrees, of which 358,000 (20.0%) were business degrees and 81,000 (4.5%) were engineering degrees¹. Furthermore, over 2/3 of these engineering graduates will join private industry and business (69%), with a smaller group of graduates moving into government jobs (10%) or returning to the education sector (21%)². These graduates are making the practical decision to join an existing organization to begin their careers and we refer to these students as “joiners.”

At the same time, students have shown significant interest in entrepreneurship or “starting something” as a career choice. In a 2014 study, 61% of recent college graduates expressed an interest in starting a business and 45% said that it was likely that they would start a business someday³. It is not surprising that this career choice among college students is this significant: entrepreneurship courses on campuses across the U.S. have become popular and ubiquitous, growing from about 500 in 1985 to over 5,000 in 2008⁴. We could label those voicing an interest in starting a new enterprise as “starters.”

We also note that today's undergraduate engineering student is part of the "millennial generation" (born 1982-2003). By 2020, Millennials will comprise more than one of three adults in the U.S. and by 2025 they will make up as much as 75% of the workforce⁵, meaning that in the very near future Millennials will be leading our workplaces and social culture. Importantly affected by the events of 9/11/2001 in New York and by the mid-decade global recession (2007-2008), Millennials are proving to be quite different from their predecessor generation, Gen-X (born 1965-1981), and from the Baby Boomers (born 1946-1964). In 2013, the Cone Communications Social Impact Study⁶ surveyed 1,270 U.S. adults of all generations and found Millennials to be the generation most focused on corporate social responsibility when making purchasing decisions. In this same study, more than one-third of Millennials (36% vs. 29% for the general population) had researched a company's business practices and support of issues. They are also more likely to weigh social and environmental commitments when making critical financial choices, including decisions about where to work (78% vs. 71%) and how to invest (64% vs. 60%).

This generational interest in social issues has led to increased on-campus interest in topics such as social entrepreneurship and sustainable business practices. These issues are reaching the Millennial generation concurrent with dire warnings about the future, such as UN reports on the potential devastating impact of climate change⁷ or the growing challenge of global poverty⁸. As of 2011, more than 148 institutions globally were teaching some aspect of social entrepreneurship on their campuses,⁹ while the Association for the Advancement of Sustainability in Higher Education (AASHE)¹⁰ reports over 1,100 institutional members and an annual meeting that attracts over 2,000 participants¹¹, many of these students interested in a career that emphasizes sustainability, who we call "socially oriented."

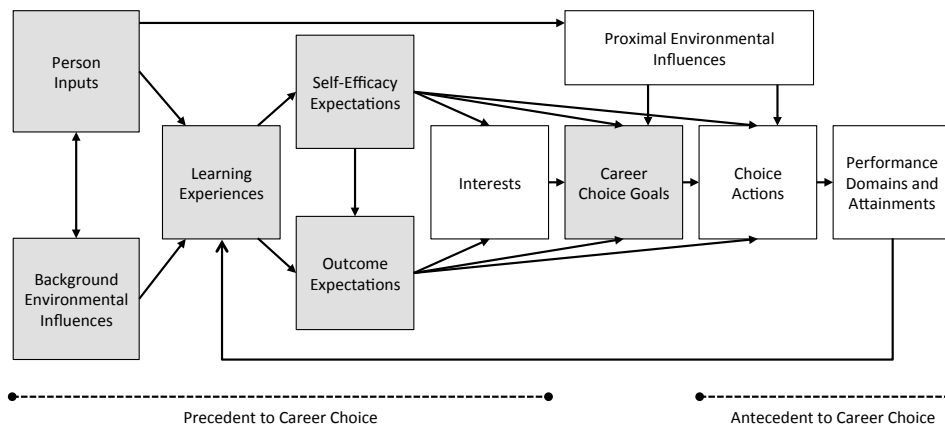
We contrast students who might have "socially oriented" career goals with those who are interested in a career within a company or industry where the primary objective is financial gain. We refer to these students as "market oriented." As Martin and Osberg¹² describe it, market oriented students embrace a work product that is "organized to serve markets that can comfortably afford the new product or service, and is thus designed to create financial profit. Profit is sine qua non, essential to any venture's sustainability and the means to its ultimate end." Granted, making a profit may not be the top-of-mind motivation for students with a market oriented career goal but adopting that career objective becomes an important part of their long-term success on the job.

We are interested in this intersection of "starters and joiners" and students who are attracted to career outcomes that are "market oriented" or "social oriented." What is it that distinguishes these students from each other? What are the characteristics, attitudes and behaviors that define a "market oriented" student versus a "social oriented" student? And how might this prove helpful in designing educational experiences and preparing more students to pursue an entrepreneurial opportunity post graduation?

Making a Career Choice: Social Cognitive Career Theory as a Theoretical Framework

Social cognitive career theory (SCCT) describes the processes by which students make career choices^{13,14}. Lent and colleagues have shown that SCCT can successfully describe this choice process in many types of post secondary students, engineering students in particular^{15–18}.

SCCT is derived from Bandura's social cognitive theory^{19,20} and incorporates variables such as self-efficacy, outcome expectations, environmental and demographic factors. The SCCT model can be described as two major processes: inputs and experiences precedent to career choice, and results and opinions antecedent to career choice. This research focuses on the processes that are part of the precedence to career choice, as shown in Figure 1.



*Figure 1. Social Cognitive Career Theory based on Lent et al. (1994, 2006).
The shaded boxes are a focus of the current research.*

The precedence for career choice begins as “person inputs,” “background environmental influences” and “learning experiences.” Lent and Brown¹⁴ describe person inputs as gender, race/ethnicity, and disability/health status. These factors interact with background influences, such as family socioeconomic status and parental occupations to influence learning experiences. Learning experiences can be summarized as intended major of study, as we have done in this research study.

These processes impact self-efficacy expectations. Self-efficacy refers to a belief an individual holds about their abilities to engage in a certain behavior or complete a course of action in a particular performance domain^{13,19}. In past studies, entrepreneurship among engineering students has been linked to having higher levels of business skill self-efficacy^{21,22}.

Outcome expectations describe an individual's beliefs about the results or consequences of particular actions²⁰. Lent et al. suggests that students can distinguish between career choice goals (e.g., the decision to choose a certain career pathway, such as start a company) and performance goals (e.g., the desire to earn a grade in a particular course). In SCCT the interaction of the social cognitive variables with other variables describing personal and background environment are used to help explain the career paths students follow¹³. Lent has also found the SCCT model has predictive ability across gender, major and different types of campuses¹⁶.

However, very little research has been conducted using the SCCT model to predict entrepreneurial intent or the career choice between meta-outcomes such as working in a for-profit or non-profit organization. Therefore, a research study that applies the SCCT model to understanding the precedents of making a career choice to, for example, start an organization or pursue a “socially-oriented” career and the resulting implications for engineering education is both valuable and timely. We note that this work builds on prior Epicenter research that identified significantly entrepreneurial intent for business majors compared to engineering majors, where the distinction between starting versus joining an organization was first introduced²³. In that study it was found that female engineering and business majors were more likely than their male colleagues to choose a career goal of joining an existing for-profit or non-profit business or organization (as opposed to starting a for-profit or non-profit). That work also looked at the correlates to entrepreneurial intent, and found significant correlations with innovation orientation, aspiring to a career that is challenging, and being attracted to novel endeavors.

The Art of the Start: Starters and Joiners

Guy Kawasaki, entrepreneur and author of *The Art of the Start*²⁴, opens his book with a piece of advice to aspiring entrepreneurs: “*It’s much easier to do things right from the start than to fix them later.*” His point is that some people are driven by what interests them, driven to the point that they will start on their own path, in their own way. These are “starters.”

For the purposes of this research, we define Starters as those individuals that have defined their career goal to start a business or an organization. By contrast, Joiners are a separate set of individuals that view their career goals as adding value by joining an existing business or organization. We seek to measure the specific characteristics, attitudes and behaviors of Starters as more or less distinct from the specific characteristics, attitudes and behaviors of Joiners.

To define the characteristics, attitudes and behaviors of Starters we begin with the domains of entrepreneurship and innovation. There has been much academic and industry research done on the description of entrepreneurs and the process of innovation; most of this exceeds our simple definition of Starters. However, in the review of this literature we have identified three basic characteristics that seem to define the Starter persona, as shown in Figure 2. It is not complete; we use it as a starting place.

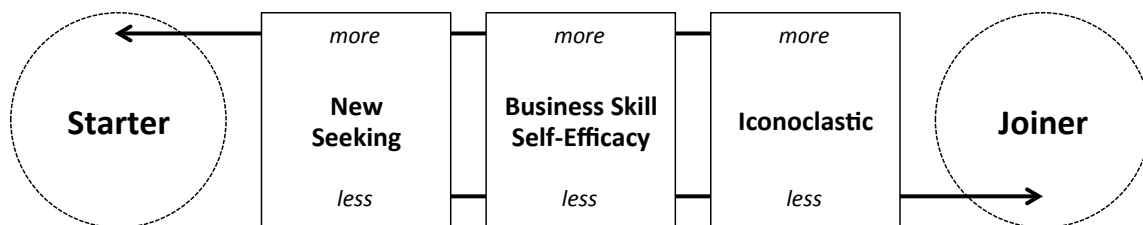


Figure 2. Description of Starter Students and Joiner Students

New Seeking - The first characteristic common to Starters is the search for “new,” something different from the current status, a behavior we call “new seeking.” This is often labeled “discovery” and was identified as an important characteristic in Kirton’s Adaption-Innovation Inventory (KAI)^{25,26} and Dyer’s model of innovative behaviors^{27,28}. The act of discovery often includes the search for novel goals and innovative solutions, and is associated with entrepreneurial career intent.

Business Skill Self-Efficacy – The second characteristic is Bandura’s classic definition of self-efficacy, the belief that one can successfully perform a certain behavior or complete a course of action within a particular performance domain^{19,20}. Robinson developed one of the first models of entrepreneurial attitudes that identified four factors – goal achievement, innovation, control and self-esteem – with self-esteem defined as “pertaining to self-confidence and perceived competency of an individual in conjunction with his or her business affairs.”²⁹ In Robinson’s analysis, self-esteem (or as we refer to it, self-efficacy) was one of the most influential factors defining the difference between entrepreneurs and non-entrepreneurs. In the case of entrepreneurship, domain self-efficacy is often business skill related and in the innovation domain it may involve the inherent belief in one’s own creativity or desire to solve a difficult problem with a novel solution. The greater business skill self-efficacy, the more likely one is to be a Starter, the lower business skill self-efficacy the more likely one is to be a Joiner.

Iconoclastic – The definition of iconoclast is “a person who criticizes or opposes beliefs and practices that are widely accepted.”³⁰ The late Steve Jobs was often cited as an example of an iconoclast. Dyer et al.²⁷ refer to this as the desire to “change the status quo” and see it as the necessary precursor to all innovative behavior. Drucker³¹ sees the desire to change the status quo as central to the definition of entrepreneurship – “the entrepreneur always searches for change, responds to it, and exploits it as an opportunity.” This iconoclastic behavior is often exhibited as questioning authority, “shaking things up” or a pervasive optimism about the future made possible by change.

Career Outcome Expectations: Market or Social

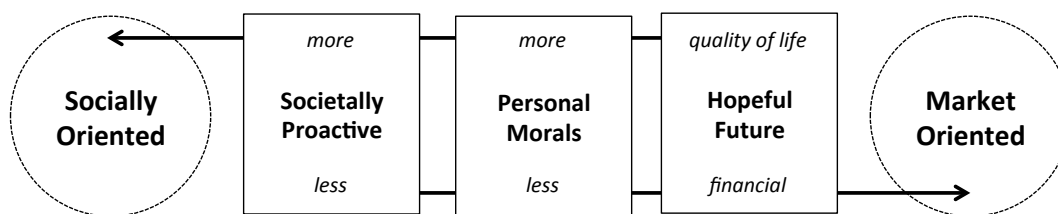
In the SCCT model, Lent et al. describes a stage of thinking where students anticipate a likely career outcome from their potential career choice. They refer to this as outcome expectation and describe it as “imagined consequences of performing particular behaviors (“if I do this, what will happen?”)¹³. The formation of the knowledge of potential career outcomes is often influenced by family experience, previous work experience and academic exposure to potential areas of career choice. Still, it is difficult for the outcome expectations to be overly precise, as Lent notes “the vagaries of academic and career environments often produce only imperfect linkages between quality of performance and outcomes.”¹³

Within this sense of career outcomes there is often a fundamental career choice that is of growing importance to the Millennial generation – do I follow a career of societal contribution or a career of working within the commerce driven marketplace? A way to understand these different pathways, particularly as they may appear to the post-secondary student, is to study to the body of literature concerning social entrepreneurship in comparison to business or marketplace entrepreneurship. Weerawardena and Sullivan-Mort describe social

entrepreneurship as “organizations that create and manage innovative entrepreneurial organizations or ventures whose primary mission is the social change and development of their client group”³². This contrasts with business or marketplace entrepreneurs as described by Martin and Osberg¹² that “serve markets that can comfortably afford the new product or service, and is thus designed to create financial profit.”

There has been much written on the motivational differences between social and market entrepreneurs. The challenge is to disentangle the characteristics that define common elements of entrepreneurship from the career choice differences between a socially relevant outcome and a marketplace relevant outcome. After reviewing the literature on the comparisons between social and marketplace entrepreneurship and setting aside common entrepreneurial characteristics a model emerges that identifies three principle characteristics, as shown in Figure 3. We have chosen to call these factors “Societally Proactive”, “Personal Morals” and “Hopeful Future.”

Figure 3. Description of Market-Oriented and Social Oriented Students



Societally Proactive - First, and perhaps most obvious, is that students who are interested in career outcomes that effect society in general exhibit a proactive interest in societal-oriented goals. Sullivan-Mort et al. identify the primary characteristic of social entrepreneurs as “first driven by the social mission of creating better social value than their competitors.”³³ Students who are attuned to societal opportunities and motivated to become involved are more likely to choose socially oriented career outcomes.

Personal Morals - Second, students who are interested in social problems tend to have a greater sense of their own morality and hold themselves to higher moral standards. In the Sullivan-Mort et al. multidimensional model of social entrepreneurs, they refer to this as “balanced judgment” and describe it as “a coherent unity of purpose and action in the face of moral complexity.”³³ This is not to imply that students who seek a market oriented career goal have lesser moral standards, only that socially oriented students have a greater sense of their own morality and seek career outcomes where morality can be directly linked to the outcome.

Hopeful Future – Many students are hopeful about their future, the difference is in what they hope for. According the Martin and Osberg¹², social entrepreneurs tend to see a future where societal problems are addressed and “a new equilibrium is achieved ensuring a better future for the targeted group and even society at large.” Socially oriented students tend to see their goals extrinsically, in connection with others, like family and friends, while a hopeful future for market-oriented students is often associated with personal financial security.

SJMS Theoretical Framework

This leads to the theoretical framework that guides this paper. Lent et al. predicts that career choice is a function of precedent factors related to background, environmental influences and learning experiences. These precedent factors are mediated by two additional precedent factors, self-efficacy and career outcome expectations. We predict, from this model, that a career choice of social entrepreneurship is a function of background, environmental influences and learning experiences, a greater level of starter self-efficacy and an interest in socially oriented career outcomes, as shown in Figure 4. Similarly, background, environmental influences and learning experiences, a lower level of starter self-efficacy and an interest in a market oriented career outcome will predict career choice of a “market value provider” or a “for profit” career path which describes almost 70% of college students post-graduation.

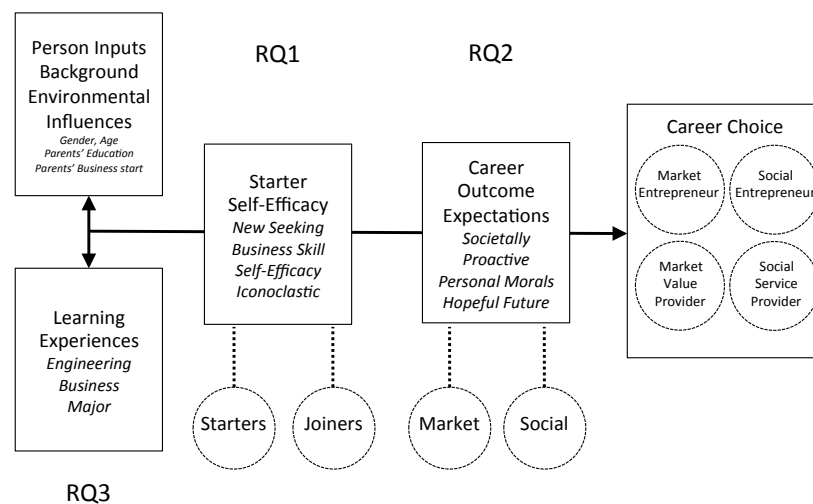


Figure 4. Starter-Joiner Market-Social Theoretical Framework for Student Career Decisions adapted from Lent (1994, 2006)

Research Questions

The research questions guiding the present study are:

1. How do students who express a career interest in starting an organization (Starters) differ from students who would rather join an existing organization (Joiners)?
2. How do students with career expectations that are Socially Oriented (not-for-profit) differ from students who are Market Oriented (for-profit) in their career outcome goals?
3. How do these choices between starter-joiner and socially-market oriented career goal outcomes differ between engineering and business students?

Methods

Survey Instrument and the Dependent Variables

Data for this study came from participants in Young Entrepreneurs Study (YES)³⁴ a joint project between Tufts University and Stanford University to study entrepreneurial purpose in young

adults. YES is a mixed methods longitudinal study of the development of entrepreneurial purpose, achievements, and character attributes among diverse adolescents and young adults in the United States. The research seeks to identify “the cognitive, motivational, behavioral, and ecological bases” of entrepreneurship development. The present study draws data from the first wave of data collection (n = 4,004) that occurred between January and June 2012.

The sample for this study includes only those survey participants who are post-secondary students working toward an engineering or business fields major (n = 973). These are the same majors considered in our prior research²³ that showed significant differences between engineering and business majors in entrepreneurial intent. In addition, U.S. Business Schools and Engineering Schools have been the among the most proactive units on college campuses in developing entrepreneurship programing for their respective students, sometimes in partnership with one another, sometimes in competition, and sometimes independently of one another³⁵.

The YES participants were asked to “*select your most important career goal*” and were only allowed to choose one option. They were offered a range of choices (“*musician, actor, dancer or other creative artist,*” “*involved in politics*” or “*civil service (e.g., education, government employee, etc.).*” “*start a non-profit organization,*” “*start my own business,*” “*work for a non-profit organization*” and “*work within a for-profit organization/business.*”)

Business Self-Efficacy	Starters	<p><i>“start my own business”</i> Market Entrepreneur unadjusted n = 311 resampled n = 50</p>	<p><i>“start a non-profit organization”</i> Social Entrepreneur unadjusted n = 22 resampled n = 50</p>
	Joiners	<p><i>“work within a for-profit organization/business”</i> Market Value Producer unadjusted n = 360 resampled n = 50</p>	<p><i>“work for a non-profit organization”</i> Social Service Provider unadjusted n = 61 resampled n = 50</p>
		Market Oriented	Social Oriented
		Career Outcome Expectation	

Figure 4. Unadjusted and Resampled Sample Sizes by Career Choice

The engineering and business major participants for this study were selected as those who chose one of four career goals – “*start a non-profit organization,*” “*start my own business,*” “*work for a non-profit organization*” and “*work within a for-profit organization/business.*” The first two choices formed the data subset of “starters” while the second two choices were considered “joiners.” Similarly, the first and third choices became the data subset of “social oriented” career goals while the second and fourth choices were considered “market oriented.” This resulted in a total unadjusted sample (n = 754) that produced the dependent variables for this analysis, as shown in Figure 4.

The research sample presented a problem with the uneven sizes of the uneven distribution of the career choice dependent variable cell sizes. For example, only 83 participants expressed an interest in a Socially Oriented career outcome and only 22 of these participants could be classified as Starters compared to 671 participants with an interest in a Market Oriented career outcome of which 333 participants were classified as Starters overall. These dramatically different cell sizes cause problems with bias, variance, confidence intervals and prediction error.

We dealt with the differing sample sizes in each cell through bootstrap resampling. The independent variables within the unadjusted sample are normally distributed so bootstrap sampling is useful for quantifying the behavior of the parameter estimates, generally reducing standard error and improving the calculation of confidence intervals and linear regression modeling³⁶. The bootstrap sample size was set to 50-observations for each cell which is roughly twice the smallest cell sample size and about 15 % of the largest sample cell size, totaling 200-observations for the sample set. Each cell observation was randomly chosen (with replacement) from the corresponding unadjusted data set, completing a 50-observation set. This process was repeated 1,000 times for each cell and then a mean was calculated for each observation for each independent variable. The sample cells were then combined into a 200-observation data set for analysis. A comparison of demographic variables between the adjusted and resampled data is shown in Table 1.

The YES survey contained 25 measures or multi-items constructs that included from 3 to 12 items each. Some measures included subscales, so in total this data set included 37 individual measures. A description of the measures, including Cronbach alpha scores and the diagnostic questions are shown in Appendix A.

For the data analysis we conducted one-way analysis of variance (ANOVA) with Tukey posthoc tests. The measures and diagnostic questions that showed the biggest difference between groups were sorted using principal component analysis and confirmatory factor analysis using Promax vector rotation³⁷ to identify underlying trends in the data. To assess predictive power the factor grouped measures and diagnostic questions were organized into conceptual models and tested using logistic regression. Bootstrap resampling and all analysis was done in R³⁸ with a collection of package components³⁹⁻⁴¹.

Participant Demographics

The participant demographics of the unadjusted sample (n = 754) are 46 % female, mean age of 21.0 years, with 10% being an under represented minority (URM), as shown in Table 1. Engineering majors were 48%, while business majors were 52% of the unadjusted sample. Mother's education level is measured by an ordinal variable where (4) represents completion of a 2-year degree while (5) is completion of a 4-year degree with a 4.27 sample mean. Mother's education has been shown to be an effective a proxy measurement for family socioeconomic status⁴². Familial start-up experience is measured by an ordinal variable where (0) means no start up experience (1) one parent start-up experience and (2) two parent start-up experience, with a .58 sample mean.

Table 1. Demographic Description – Unadjusted Data and Resampled Data

Category: Unadjusted Data		n	% Female	Age (Years)	% URM	% Eng /Business Major	Mother's Education Level	Familial Start-Up Experience
Total Sample		754	46%	21.0	10%	48%/52%	4.27	.58
Starters		333	34%	21.1	13%	38%/62%	4.22	.68
Joiners		421	56%	20.9	8%	56%/44%	4.31	.51
Socially Oriented		83	71%	21.0	14%	40%/60%	4.44	.59
Market Oriented		671	43%	21.0	10%	49%/51%	4.25	.58
Starter		22	64%	21.1	18%	32%/68%	4.60	.85
Starter		311	31%	21.1	13%	38%/62%	4.19	.67
Joiner		61	74%	21.0	13%	43%/57%	4.39	.50
Joiner		360	53%	20.9	7%	58%/42%	4.30	.51
Resampled								
Starter		50	59%	21.1	12%	29%/71%	4.64	.77
Starter		50	32%	21.1	12%	41%/59%	4.19	.66
Joiner		50	71%	21.0	8%	43%/57%	4.32	.48
Joiner		50	53%	20.9	7%	56%/44%	4.36	.49
Total		200	54%	21.0	10%	42%/58%	4.38	.60
Under Represented Minority (URM) is a dummy variable: (1) Black, Latino/a, Native American, Pacific Islander, (0) all other								
Mother's Education Level is an ordinal variable: (1) 8 th grade or less, (4) 2-year degree, (7) graduate degree								
Family Start-Up Experience is an ordinal variable: (0) no family experience, (1) either Mother and Father experience (2) both								

Important differences between Starters and Joiners, Market Oriented and Socially Oriented participants begin to appear in the demographic profiles of these groups. Starters are only 34% female versus 56% for Joiners, a significant difference ($t = -6.20, p < .000$, Cohen's $d = .45$). Similarly there are significant differences between Starters and Joiners in URM status (13 % versus 8%, $t = 2.35, p < .019$, Cohen's $d = .18$), engineering major (38% vs. 56%, $t = -4.93, p < .000$, Cohen's $d = .36$) and familial start-up experience (.68 vs. .51, $t = 3.33, p < .019$, Cohen's $d = .26$). There were no significant differences between Starters and Joiners in age or mother's education levels.

There were few differences between Market Oriented and Socially Oriented participants; there were no significant differences between Market Oriented and Socially Oriented participants in terms of age, URM status, major, mother's education levels or familial start-up experience. The only significant difference was in sex, where Socially Oriented participants were significantly more like to be women than were Market Oriented participants (71% vs. 43%, $t = 5.26, p < .000$, Cohen's $d = .57$).

Data Analysis Process

We began the analysis process by creating theoretical models of what might define starters versus joiners and market versus socially oriented participants based on literature review, as shown in Figure 5. Then using the resampled and balanced data set we examined the mean score

differences between these groups using ANOVA and effect size (Cohen's d) selecting those measures with the most significant differences for regression modeling.

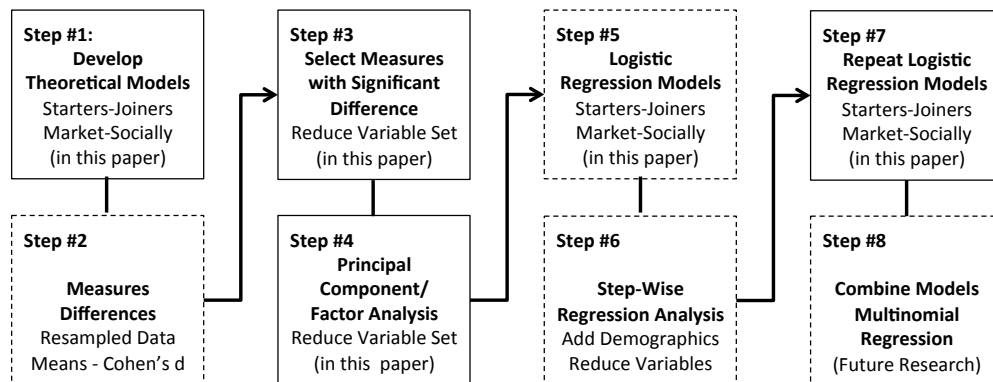


Figure 5. Data Analysis Process

Principal Component Analysis (PCA) and Confirmatory Factor Analysis (CFA) were used to both uncover the underlying data trends and reduce the variable set. We then used logistic regression to qualify model fit and step-wise regression to reduce the variable set. The resulting regression models are described in this paper. Finally, the four choice outcome is suited for multinomial regression, which will be part of future research and not covered in this paper.

Results by Research Question

Research Question #1 - *How do students who express a career interest in starting an organization (Starters) differ from students who would rather join an existing organization (Joiners)?*

We began by examining the 37 measures in the YES survey for significant mean differences between Starters and Joiners and found that 18 measures were statistically different between the groups (see Step #3, Figure 5). We then conducted principal component analysis (PCA) on these 18 measures and found a three-factor solution (see Step #4, Figure 5). Through confirmatory factor analysis (CFA), only 10 measures significantly loaded ($>.50$) onto these three factors, as shown in Table 2.

The three factors that emerge largely align with our Starter-Joiner theoretical model (see Figure 2). The first factor seems to support “new seeking” by including the measure describing the desire to work for Novel Goals and the measure Innovation Orientation which is the participants desire to partake in a range of what are considered classical discovery oriented activities. The second factor to emerge seemed to support “self-efficacy” with the measure of Self-Starter (a measure of self-motivation), Alternative Problem Solving (the ability to switch gears and apply alternative means for reaching a goal when faced with setbacks or failures) and the ordinal variable of Entrepreneurial Activity, that measures the number of times a participant was involved in an entrepreneurial activity.

The third factor also seemed to support the third factor of our Starter-Joiner theoretical model. This included Mover & Shaker (a measure that include items like “*unconventional, nonconformist*” or “*willing to stand up for what I believe*”), Questioning Authority and Self-Efficacy: Optimism (the belief that future outcomes can be influenced in a positive way).

Table 2. Differences between Starter and Joiner Participants and Factor Analysis of the Related Measures

						Factor Analysis			
	Starters		Joiners				New Seeking	Domain Self-Efficacy	Iconoclastic
Measures ^a	Mean	SD	Mean	SD	Diff ^b	d ^c	Factor 1	Factor 2	Factor 3
Entrepreneurial Intent	3.98	.09	2.73	.08	1.25	14.75	.74		
Novel Goals	3.83	.02	3.57	.06	.26	5.87	.99		
Career Values: Entrepreneurship	4.08	.04	3.76	.08	.32	5.40	1.04		
Innovation Orientation	3.60	.07	3.16	.11	.44	4.57	1.04		
Self-Starter	4.06	.10	3.85	.08	.21	2.36		1.07	
Alternative Problem Solving	4.13	.07	4.02	.02	.11	2.11		.89	
Entrepreneurial a ^d	1.07	.09	.80	.04	.27	4.03		.72	
Sense of Self: Mover & Shaker	3.73	.13	3.47	.12	.26	2.09			1.13
Self Efficacy: Optimism	3.97	.05	3.65	.08	.32	4.93			.78
Questioning Authority	3.96	.03	3.75	.02	.21	7.64			.59
					Variance by Factor		41%	25%	24%
					Cumulative Variance		41%	67%	91%
Notes:									
a – Measures used a variety of Likert scales with (1) being the low end and (5) being the top end, except Entrepreneurial Activity									
b – All differences significant at the p < .000 confidence level									
c – Cohen’s d measure of effect size, +.50 is considered highly significant									
d – Entrepreneurial Activity is an ordinal variable counting the number of times a participant was involved in an entrepreneurial activity									

The significant measure separating Starters from Joiners was Entrepreneurial Intent (mean difference = 1.25, Cohen’s $d = 14.75$), which is not surprising because Entrepreneurial Intent was determined by questions pertaining to starting a business. Questioning Authority was also a significant differentiator with Starters and much more likely to be so than with Joiners. PCA and CFA began to reveal trends within these variables and a three-factor solution, as shown in Table 2, accounted for 91 % of the variance.

A logistic regression was conducted to determine the predictors of a Starter (1) or Joiner (0) career choice (see Step #6, Figure 5). The 10 measures (and three factors) identified in the PCA and CFA analysis were used and the results are shown as Model 1 in Table 3. Overall, the regression model was a statistically significant predictor, Wald $\chi^2 (10) = 137620$, $p < .000$. The odds ratio shows both the degree and direction that a predictor variable impacts the dependent variable, in this case the career choice of Starter versus the career choice of Joiner. An odds ratio over 1.0 indicates a positive impact, less than 1.0 a negative impact on the career choice to be a Starter. In the case of Model 1, expressing an entrepreneurial intent (Odds Ratio 2.11) and having a sense of self-efficacy that is positive about future outcomes (Self Efficacy: Optimism – OR 1.38) had the most significant positive impact on a Starter career choice. Surprisingly, three measures that are normally assumed to be part of entrepreneurial intent, (Alternate Problem Solving (OR .71), Novel Goals (OR .85) and Innovation Orientation (OR .87), had the most significant negative impact on Starter career choice. A rationale for this result is outlined in the Discussion section of this paper.

Table 3. Logistic Regression Predicting Starter Career Choice

Predictor Variable	Model 1						Model 2					
	B	SE	p <	Odds Ratio	95% CI OR Lower-Upper		B	SE	p <	Odds Ratio	95% CI OR Lower-Upper	
Entrepreneurial Intent	.75	.03	.000	2.11	1.99	2.25	.70	.03	.000	2.02	1.90	2.15
Novel Goals	-.16	.08	.040	.85	.73	.99	-.15	.08	.043	.86	.74	.99
Career Values: e-ship	.12	.09	.183	1.13	.95	1.35						
Innovation Orientation	-.12	.07	.087	.89	.77	1.02	-.14	.07	.032	.87	.76	.99
Self Starter	.13	.06	.044	1.13	1.00	1.28						
Alternate Problem Solving	-.34	.08	.000	.71	.61	.83	-.24	.07	.001	.79	.68	.91
Entrepreneurial Activity	-.11	.07	.098	.89	.78	1.02	-.10	.06	.061	.90	.81	1.00
Mover & Shaker	.13	.05	.016	1.14	1.00	1.28	.17	.07	.013	1.19	1.04	1.36
Self Efficacy: Optimism	.32	.08	.000	1.38	1.19	1.60	.36	.07	.000	1.44	1.25	1.66
Questioning Authority	.12	.08	.119	1.12	.97	1.31	.11	.08	.162	1.11	.96	1.29
Gender (0 = Male)							-.27	.08	.001	.77	.65	.90
Major (0 = Engineering)							.18	.09	.049	1.19	1.00	1.42
Familial Start-Up Exp.							.10	.07	.121	1.11	.97	1.27
Bold values indicate statistical significance at the p < .050 level												
	df	Score	p <				df	Score	p <			
Wald Test (χ^2)	10	137620	.000				11	142575	.000			
Classification: Resampled	100%						100%					
Unadjusted							78%					

To determine the impact of other SCCT precursor variables, we included gender, major, race, mother's education level and familial start-up experiences into Model 2 (see Step #7, Figure 5). Step-wise regression was used on these 15 variables to determine the most significant contributors and 11 measures emerged to form Model 2 as shown in Table 3. The variables for gender (OR .77, favoring males = 0), and major (OR 1.19, favoring Business degrees = 1) are also significant predictors of Starter career choice. Model 2 is statistically significant and accurately classified 100% of the resampled cases and 78% of the unadjusted sample cases.

Research Question #2 - *How do students with career expectations that are Socially Oriented (not-for-profit) differ from students who are Market Oriented (for-profit) in their career outcome goals?*

Similar to the Starter-Joiner analysis, we began by examining the 37 measures in the PROJECT survey for significant mean differences between Socially Oriented and Market Oriented participants and found that 18 measures were statistically different between the groups (see Step #3, Figure 5). We then conducted principal component analysis (PCA) on these 18 measures and found a three-factor solution (see Step #4, Figure 5). Through confirmatory factor analysis (CFA), 8 measures significantly loaded (>.80) onto these three factors, as shown in Table 4.

Table 4. Differences between Socially Oriented and Market Oriented Participants and Factor Analysis of the Related Measures

							Factor Analysis		
	Socially Oriented		Market Oriented				Societally Proactive	Personal Morals	Hopeful Future
Measures ^a	Mean	SD	Mean	SD	Diff ^b	d ^c	Factor 1	Factor 2	Factor 3
Sense of Self: Mover & Shaker	3.72	.09	3.48	.13	.24	1.85	1.06		
Assertive	3.87	.02	3.79	.05	.08	1.83	.97		
Hopeful Future: Quality of Life	4.36	.04	4.16	.08	.20	2.99	.94		
Career Values: Socially Oriented	4.55	.07	3.87	.10	.68	6.80	.79		
Personal Values Scale	4.40	.10	4.22	.04	.18	1.69		1.04	
Sense of Self: Fair and Honest	4.32	.07	4.24	.02	.08	1.92		.95	
Future Oriented	4.07	.09	3.99	.02	.08	1.90		.95	
Hopeful Future: Financial Security	3.98	.13	4.15	.09	-.17	2.49			1.01
					Variance by Factor		45%	37%	15%
					Cumulative Variance		45%	82%	97%
Notes:									
a – Measures used a variety of Likert scales with (1) being the low end and (5) being the top end, except Entrepreneurial Activity									
b – All differences significant at the p < .000 confidence level									
c – Cohen's d measure of effect size. +.50 is considered highly significant									

The significant measure separating Socially Oriented participants from Market Oriented participants was (not surprisingly) the measure Career Values: Socially (mean difference = .68, Cohen's d = 6.80). Hopeful Future: Quality of Life showed significant advantage for Socially Oriented participants (.20, 2.99), as did Sense of Self: Fair and Honest (.08, 1.92). Of note, mean scores for the measure Hopeful Futures: Financial Security favored Market Oriented participants (-.17, 2.49) as predicted in our theoretical model of Socially-Market Oriented career choices (see Figure 3). Also, Sense of Self: Mover & Shaker (.24, 1.85) is the only measure shared with the Starter-Joiner model.

PCA and CFA began to reveal trends within these variables and a three-factor solution emerged, as shown in Table 4. These three factors accounted for 97% of the variance in the data set. The first factor, made up of the measures Sense of Self: Mover & Shaker, Assertive, Hopeful Future: Quality of Life and Career Values: Socially Oriented, accounted for 45% of the variance and roughly aligns with the first factor of our Socially-Market Oriented theoretical model called "Societally Proactive." The second factor, made up of the measures Personal Values Scale, Sense of Self: Fair and Honest and Future Oriented accounted for 37% of the variance and is similar to the second factor, "Personal Morals," identified in our Socially-Market Oriented theoretical model. Finally, the third factor is just one measure, Hopeful Futures: Financial Security, and it alone accounts for 15% of the variance. This aligns with the third factor of our Socially-Market Oriented theoretical model, with greater interest in financial security aligning with an interest in a Market Oriented career outcome.

A logistic regression was conducted to determine the predictors of a Socially Oriented (1) or Market Oriented (0) career choice (see Step #6, Figure 5). The 8 measures (and three factors) identified in the PCA and CFA analysis were used and the results are shown as Model 1 in Table 5. Overall, the regression model was a statistically significant predictor, Wald $\chi^2(0) = 61485$, $p < .000$. The odds ratio shows the both the degree and direction that a predictor variable impacts the dependent variable, in this case the choice of Socially Oriented career versus the choice of Market Oriented career.

In the case of Model 1, expressing an interest in a Socially Oriented career had the largest positive influence (Odds Ratio - 2.48) followed by the measures Quality of Life (OR 2.01) and Assertive (OR 1.40). The measures Mover & Shaker (OR .71), Fair and Honest (OR .79) and Financial Security (OR .23) favored participants who were attracted to a Market Oriented Career.

Table 5. Logistic Regression Predicting Social Oriented and Market Oriented Career Outcomes

Predictor Variable	Model 1						Model 2					
	<i>B</i>	<i>SE</i>	<i>p</i> <	Odds Ratio	95% CI OR		<i>B</i>	<i>SE</i>	<i>p</i> <	Odds Ratio	95% CI OR	
Mover & Shaker	-.35	.08	.000	.71	.60	.83						
Assertive	.34	.10	.001	1.40	1.16	1.71	.29	.09	.001	1.33	1.13	1.58
Quality of Life	.70	.21	.001	2.01	1.34	3.00	.59	.18	.001	1.81	1.27	2.57
Socially Oriented	.91	.09	.000	2.48	2.10	2.96	.78	.07	.000	2.17	1.90	2.48
Personal Values Scale	.29	.08	.000	1.33	1.15	1.54	.52	.07	.000	1.68	1.47	1.93
Fair and Honest	-.23	.15	.123	.79	.59	1.06	-.61	.14	.000	.54	.42	.71
Future Oriented	.32	.14	.022	1.38	1.05	1.81						
Financial Security	-1.47	.11	.000	.23	.19	.29	-.88	.12	.000	.41	.33	.53
Gender (0 = Male)							.62	.08	.000	1.86	1.59	2.18
Mother's Education Level							-.11	.08	.158	.90	.78	1.04
Familial Start-Up Exp.							.05	.03	.153	1.05	.98	1.12
Bold values indicate statistical significance at the p < .050 level												
	df	Score	p <				df	Score	p <			
Wald Test (χ^2)	8	61485	.000				9	81271	.000			
Classification: Resampled	100%						100%					
Unadjusted							59%					

To determine the impact of other SCCT precursor variables, we included gender, major, race, mother's education level and familial start-up experiences into Model 2 (see Step #7, Figure 5). Step-wise regression was used on these 13 variables to determine the most significant contributors and 9 measures/demographic variables emerged to form Model 2 as shown in Table 5. The variables for gender (OR 1.86, favoring females = 1), mother's education level (OR .90, favoring Market Oriented = 0) and familial start up experience (OR 1.05) are also significant predictors of Socially oriented career choice. Model 2 is statistically significant and accurately classified 100% of the resampled cases and 58% of the unadjusted sample cases. The lower prediction rate in the unadjusted data set is error within the data set due to the large discrepancy in cell sizes, with only 83 observations of Socially Oriented career choice versus 671 observations of Market Oriented career choice.

Research Question #3 - How do these choices between starter-joiner and socially-market career goal outcomes differ between engineering and business students?

Lent et al. identify "learning experiences" as one of the key precedent activities to career choice (see Figures 1 and 4) and we can use participant undergraduate major (engineering or business) as a rough indicator of learning experiences to measure the impact on career choice. In previous analysis, undergraduate major was a meaningful variable in Starter self-efficacy but was not a significant factor in the Socially or Market Oriented career outcome choice. These differences are evident when the data is separated by undergraduate major, as shown in Table 6.

Overall, it appears that more business undergraduate majors identify as Starters than undergraduate engineering majors. A total of 35% of engineering undergraduate majors

identified as Starters, versus 53% of undergraduate business majors, a statistically significant difference of 18 points. By contrast, there seemed to be no difference between majors in terms of Socially Oriented outcomes, with 9% of engineering majors and 13% of business majors identifying with Socially Oriented outcomes, which is not statistically different.

Table 6. Engineering Majors and Business Majors by Key Starter-Joiner, Socially-Market Oriented Measures

	Engineering Majors		Business Majors						
Measures ^a	Mean	SD	Mean	SD	Diff ^b	df	t	p <	d ^c
Starters (% by Major)	35%		53%		-18%	751	4.92	.000	.36
Socially Oriented (% by Major)	9%		13%		-4%	750	1.55	.121	.11
Entrepreneurial Intent	3.09	1.06	3.60	.99	-.51	731	6.79	.000	.50
Entrepreneurial Activity ^d	.82	.65	1.08	.72	-.26	751	5.11	.000	.37
Financial Awareness	2.61	.65	2.95	.67	-.34	747	7.04	.000	.51
Career Values: Socially Oriented	3.88	.87	3.97	.82	-.09	732	1.42	.155	.10
Hopeful Future: Quality of Life	4.19	.55	4.34	.54	-.15	740	3.86	.000	.28
Personal Values Scale	4.12	.67	4.35	.54	-.23	687	5.26	.000	.39
Bold values indicate statistical significance at the p < .050 level									
Notes:									
a – Measures used a variety of Likert scales with (1) being the low end and (5) being the top end, except Entrepreneurial Activity									
b – Engineering Major – Business Major									
c – Cohen’s d measure of effect size, +.10 is a small difference, +.30 medium, +.50 highly significant									
d – Entrepreneurial Activity is an ordinal variable counting the number of times a participant was involved in an entrepreneurial activity									

Not surprisingly, business majors had stronger interest than engineering majors in business related measures, such as Entrepreneurial Intent, Entrepreneurial Activity and Financial Awareness. There was no difference between majors in the measure Career Values: Socially Oriented, a key variable in determining interest in Socially Oriented outcomes. However, there were significant differences favoring business majors over engineering majors in measures such as Hopeful Future: Quality of Life and Personal Values Scale suggesting, perhaps, a greater latent interest in social issues among business majors.

Discussion

The objective of this research was to better understand the forces that guide the fundamental career choices by undergraduate engineering and business students. By separating the choice option between fundamentally different options like “starting something” versus “joining something” and a career outcome focused on “socially oriented” or “market oriented” serves to highlight these forces and may help guide educators’ choices in curriculum design.

We found that social cognitive career theory (SCCT) is a useful framework for career choice analysis. The ability to combine key demographic variables with participant attitudinal data makes for a more complete picture of what drives career choices. In terms of the resulting career choice models, we are not surprised that gender played a role in both Starter-Joiner (SJ) and Market-Socially (MS) models, with women less likely to be Starters and more likely to be interested in Social outcomes. This is consistent with previous research on career choice²³ and it

could be a helpful perspective as engineering educators address the gap that exists between female undergraduate engineering majors (which has averaged 20% from 2000-2009⁴³) versus 56% female undergraduate science majors (natural sciences, physical sciences, mathematics and computer science) and 57% female undergraduates of all majors.

The resulting SJ and MS models largely align with the theoretical models of career choice outlined in the literature; however, there are some outlier measures. For example, in the SJ model, we were surprised that the odds ratio for Novel Goals, Innovation Orientation and Alternative Problem Solving did not positively predict a Starter career choice. This may be more result of bias related to our own pre-conceived notions of how entrepreneurs think, tying newness, novelty and innovation perhaps too tightly to a desire to start something. It may also be that some of the items within these measures are not appropriate for a 21.1 year-old before they have entered the workforce. For example, one item in Novel Goals is *“I take on ventures that address unmet needs”* or in Innovation Orientation the item *“Develop adequate plans and schedules for the implementation of new ideas.”* It is possible that these items and resulting measures might more accurately reflect career choice as the participants’ age and gain workplace experience.

It may also be that Starters are motivated by an entirely different desire – to be their own boss. The YES team included a set of ten diagnostic questions to better understand why participants made their career choice, and while these item-level variables have been excluded from this analysis they do provide some insight on this question. The single largest difference between Starters and Joiners on any measure in the entire survey was in response to the diagnostic question, “Why did you choose this career?” – “be my own boss” (4.21 Starters, 3.15 Joiners, +1.06, $t(14.97)$, $p < .000$, $d = 1.08$). The straightforward desire to “be my own boss,” regardless of the type of job, may be the driving force behind Starters.

The MS model seemed to align with theoretical expectations in most respects. The outlier variable was the measure Fair and Honest where the odds ratio negatively predicted a socially oriented career choice. It is only conjecture, but this may be a function of the individual items that make up this measure (see Appendix A) which also ask about “reliable,” “consistent,” and “responsible” and these characteristics are less consistent with someone who wants to facilitate societal change.

In the future, we see this research evolving in several ways. We would like to expand the SJ and MS analysis to all participants in YES of any major and any career choice. We started with engineering and business majors because they are most directed to specific job roles after graduation, but expanding these models to all majors may help provide a more complete picture of the forces behind career choices. We would also like to take this analysis to the item level. There are over 240 item-level responses in the PROJECT survey that add greater depth of perspective to this analysis and may provide additional insight into the SJ and MS models. Also, the 2x2 SJ-MS dependent variable matrix lends itself to multinomial logistic regression and helps to add perspective to the predictive power of these models.

Implications and Limitations

Educational Implications

It is remarkable that over one-third of undergraduate engineer students express an interest in “starting something” as a career choice. This leads to the possibility that perhaps not enough is being done in curricular development to adequately prepare engineering students for this career pathway. Excellent programs exist, like the NSF Epicenter and the Kern Entrepreneurial Engineering Network (KEEN), but there is certainly more that can and should be done in this area to respond to and develop this interest.

Almost one-in-ten engineering graduates are interested in a socially oriented career outcome and research suggests that this will only grow as the Millennial generation comes of age. It would seem that the incorporation of socially oriented (more kinds of issues) issues into engineering curriculum might be of interest to engineering students, particularly women who express a greater inclination toward this kind of career. Purdue University’s EPIC program provides an example of one way this might be accomplished, as well as the many social entrepreneurship classes that are expanding on campuses.

It is also apparent that a range of attitudes comes together in the making of a student’s career choice. It would seem beneficial if engineering programs and educators, and Career Development Centers assumed some responsibility in helping students better understand themselves, to attain greater self-awareness about what motivates and drives them. This requires both the tools and time to reflect, and benefits from educators who are willing to assume the role of this kind of counselor.

Considerations in Future Research

Entrepreneurship based studies are both helpful and confounding. There is an extensive body of literature on entrepreneurship and even social entrepreneurship, which is helpful. However, this can also be confounding because it is often difficult to disentangle the business and organizational aspects of entrepreneurship from the underlying desires to “start something” or “make a difference in society.”

These results showed that students with different career outcomes (socially or market-oriented) could be distinguished by key measures. But it is not entirely clear how career objectives and these measures are related. There is disagreement about the influence of demographics on career goals or career goals shape the characteristics of the individual. For example, it is not clearly understood why female students are more interested in socially oriented career outcomes than males and what role gender has on making this choice. It may be a result of background experiences or some innate construct like empathy, which is not measured by this type of research.

Finally, studying students who are Starters and interested in Socially Oriented outcomes (also known as “social entrepreneurs”) will always be difficult in general population studies because these participants are “rare birds,” often representing less than 5% of the sample. In this study

we used bootstrap resampling with replacement to compare this population to the more popular career choice outcomes but it may be that a dedicated study specifically seeking students who self-identify as “social entrepreneurs” may lead to more detailed conclusions.

Acknowledgements

We appreciate the help provided by the YES research team – Richard Lerner, Jennifer Agans, and Michelle Weiner of Tufts University and Bill Damon, Anne Colby, and Heather Malin of Stanford University – and their generous loan of the YES survey data set. We are also grateful to Barbara Karanian and Angela Harris of the Designing Education Lab at Stanford University for assistance with conceptual outlines, statistical analysis and proof reading. Finally, we extend a special thank you to Samantha Brunhaver of Arizona State University for her help in understanding and adapting the Social Cognitive Career Theory model for this study.

The support of the NSF grant number DUE-1125457 (Epicenter) is gratefully acknowledged.

Appendix A:

Young Entrepreneur Survey (YES) – Measures Description^{44,45}

Starter-Joiner Measures (Cronbach α)	Items
Entrepreneurial Intent (.89) The measure on student's Entrepreneurial Intent was created by factor analysis of career goals in the pilot dataset. It asks students how important certain career goals are to them. The items were measured on a five-point Likert scale - 1 (Not at All Important) to 5 (Extremely Important).	1) Start my own business. 2) Develop my own business. 3) Start a new organization. 4) Change the way a business or organization runs.
Novel Goals (.78) The measure on Novel Goals is part of the Entrepreneurial Intentional Self-Regulation Questionnaire. It was developed for the YES project and the factor structure was validated with a pilot sample of the YES project. It has several subscales on selection, optimization and compensation. The Novel subscale represents goals that others have not considered to address. The items were measured on a five-point Likert scale - 1 (Almost Never) to 5 (Almost Always).	1) I like to pursue projects that others have not thought about pursuing. 2) I am interested in projects that involve new ideas. 3) I take on ventures that address unmet needs.
Career Values: Entrepreneurship (.72) Student's different career values are measured with 13 items adapted from the Job Values by Johnson ⁴⁶⁻⁴⁸ . On that measure the Entrepreneurship subscale consists of 6 items and refers to a career that involves autonomy and challenging projects. The items were measured on a five-point Likert scale with responses ranging from 1 (Not Important) to 5 (Extremely Important).	1) A career where you make decisions. 2) A career where most problems are quite difficult and challenging. 3) A career that is interesting to do. 4) A career where you can see the payoff of what you create. 5) A career where you can have the chance to be creative. 6) A career that leaves you mostly free of supervision by others.
Innovation Orientation (.84) The measure on Innovation Orientation was adapted from Scott and Bruce's Measures of individuals' innovative behavior by Scott and Bruce ⁴⁹ . The measure consists of 6 items that rate the extent to which students partake in a list of behaviors. The items were measured on a five-point Likert scale with responses ranging from 1 (Almost Never) to 5 (Almost Always).	1) Search out new technologies, processes, techniques, and/or product ideas. 2) Generate creative ideas. 3) Promote and champion ideas to others. 4) Investigate and secure funds needed to implement new ideas. 5) Develop adequate plans and schedules for the implementation of new ideas. 6) Are innovative.
Optimization: Self-Starter (.80) The measure on Optimization Self-Starter is part of the Entrepreneurial Intentional Self-Regulation Questionnaire. It was developed for the YES project and the factor structure was validated with a pilot sample of the YES project. It has several subscales on selection, optimization and compensation. Optimization by being a self-starter describes the ability to self-motivate goal optimization and innovative goal optimization. The items were measured on a five-point Likert scale - 1 (Almost Never) to 5 (Almost Always).	1) I am the one who gets the ball rolling. 2) I am a self-starter. 3) I take initiative when something needs to get done.

<p>Alternative Problem Solving (.91) Students' capacity on Alternative Problem Solving is part of the Entrepreneurial Intentional Self-Regulation Questionnaire. It was developed for the YES project and the factor structure was validated with a pilot sample of the YES project. It has several subscales on selection, optimization and compensation. The compensation subscale represents Alternative Problem Solving and describes the ability to adapt to failure and reach a goal with alternative methods. The items were measured on a five-point Likert scale with responses ranging from 1 (Almost Never) to 5 (Almost Always).</p>	<ol style="list-style-type: none"> 1) When one approach fails, I try different ways to reach my goals. 2) After a failure, I come up with alternative strategies to accomplish my goals. 3) After I make a mistake, I learn from it and implement new strategies. 4) When one plan fails, I consider what went wrong and how else I can reach my goal. 5) When one strategy doesn't work, I try a new approach. 6) I overcome obstacles by creating new solutions.
<p>Entrepreneurial Activities (.73) To measure Entrepreneurial Activities students had to response to 7 entrepreneurial activity items. The responses ranged from 0 = never to 4 = four times or more.</p>	<ol style="list-style-type: none"> 1) Started a Club. 2) Organized people around a cause. 3) Devised ways to make money. 4) Designed a new product or service. 5) Developed a business plan. 6) Started a business. 7) Bought or sold a company.
<p>Sense of Self: Mover & Shaker (.76) The scale of Sense of Self was developed from the Stanford Youth Purpose Survey by Bundick et al.⁵⁰ and describes relevant characteristics of participants' sense of who they are as a person. The subscale Mover & Shaker contains 7 items. The items were measured on a five-point Likert scale with responses ranging from 1 (Not At All Central To My Sense Of Self) to 5 (Very Central To My Sense Of Self).</p>	<ol style="list-style-type: none"> 1) Willing to stand up for what I believe is right. 2) Involved in solving community problems. 3) Creative or imaginative. 4) Politically involved. 5) Compassionate, concerned about all kinds of people. 6) Unconventional, nonconformist. 7) Concerned about justice and human rights.
<p>Self Efficacy: Optimism (.88) To describe the belief that "future outcomes can be influenced in a positive way" by Schweizer & Koch⁵¹, 6 items were used. The items were measured on a five-point Likert scale with responses ranging from 1 (Almost Never) to 5 (Almost Always).</p>	<ol style="list-style-type: none"> 1) For each problem I will find a solution. 2) In difficult situations I will find a way. 3) No task is too difficult for me. 4) I master difficult problems. 5) There is no task that is too demanding for me. 6) I always find a solution to a problem.
<p>Questioning Authority (.62) Questioning Authority was measured by 3 items. The items were measured on a five-point Likert scale with responses ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).</p>	<ol style="list-style-type: none"> 1) When I think a rule is pointless I will find a way around it. 2) People in positions of authority are not always right. 3) I am willing to question people in authority.

Socially Market Oriented Measures (Cronbach α)	Items
Sense of Self: Mover & Shaker (.76) The scale of Sense of Self was developed from the Stanford Youth Purpose Survey by Bundick et al. ⁵⁰ and describes relevant characteristics of participants' sense of who they are as a person. The subscale Mover & Shaker contains 7 items. The items were measured on a five-point Likert scale with responses ranging from 1 (Not At All Central To My Sense Of Self) to 5 (Very Central To My Sense Of Self).	1) Willing to stand up for what I believe is right. 2) Involved in solving community problems. 3) Creative or imaginative. 4) Politically involved. 5) Compassionate, concerned about all kinds of people. 6) Unconventional, nonconformist. 7) Concerned about justice and human rights.
Assertive (.81) To measure the assertiveness of the participants, three items from Little ⁵² were adapted. The items were measured on a five-point Likert scale with responses ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Higher scores show stronger assertiveness.	1) When I talk with others, I give my real opinions and thoughts. 2) I say what I think. 3) When I have an opinion, I usually say it.
Hopeful Future: Quality of Life (.81) The measure on Hopeful Future was drawn from the 4-H Study dataset by Schmid et al. ⁵³ . Quality of Life is a subscale on the measure of Hopeful Future Expectations. This measure includes 11 items. Quality of Life is a subscale with 6 items and describes expectations of situations that participants will experience in life. The items were measured on a five-point Likert scale - 1 (Very Low) to 5 (Very High).	1) Have a job you like doing. 2) Be healthy. 3) Have a happy family life. 4) Have friends you can count on. 5) Be respected in the community. 6) Be involved in helping other people.
Career Values: Socially Oriented (.70) Student's different career values are measured with 13 items adapted from the Job Values Scale by Johnson ⁴⁶⁻⁴⁸ . On that measure the Socially Oriented subscale consists of two items and refers to a career that involves contributing to others. The items were measured on a five-point Likert scale - 1 (Not Important) to 5 (Extremely Important).	1) A career that gives you an opportunity to be directly helpful to others. 2) A career that is worthwhile to society.
Personal Values Scale (.82) The Scale of Personal Values has 5 items from the Search Institute's Profiles of Student Life – Attitudes and Behaviors (PSL-AB; Leffert ⁵⁴). The items assess the importance a participant places on personal values and were measured on a five-point Likert scale with responses ranging from 1 (Not Important) to 5 (Extremely Important).	1) Doing what I believe is right, even if my friends make fun of me. 2) Standing up for what I believe, even when it's unpopular to do. 3) Telling the truth, even when it's not easy. 4) Accepting responsibility for my actions when I make a mistake or get into trouble. 5) Doing my best, even when I have a job I don't like.
Sense of Self: Fair and Honest (.73) The scale of Sense of Self was developed from the Stanford Youth Purpose Survey by Bundick et al. ⁵⁰ and describes relevant characteristics of participants' sense of who they are as a person. The subscale Fair and Honest contains 7 items. The items were measured on a five-point Likert scale with responses ranging from 1 (Not At All Central To My Sense Of Self) to 5 (Very Central To My Sense Of Self).	1) Fair, unbiased. 2) Honest or truthful. 3) Responsible, someone others can depend on. 4) Reliable, consistent.

<p>Future Oriented (.86) For this study Future Oriented describes the degree to which students think specific about their future. The items were measured on a five-point Likert scale with responses ranging from 1 (Almost Never) to 5 (Almost Always).</p>	<ol style="list-style-type: none"> 1) Plan things out one step at a time. 2) Think about all of the possible good and bad things that can happen before making a decision. 3) Think about the consequences before doing something. 4) Make lists of things to do. 5) Make plans before making decisions. 6) See in advance how one thing can lead to another. 7) Think a lot about how my decisions will affect others. 8) Think things work out better if they are planned out in advance. 9) Take big projects and break them down into small steps before starting to work on them. 10) Think it's better to run through all the possible outcomes of a decision in my mind before deciding what to do.
<p>Hopeful Future: Financial Security (.80) The measure on Hopeful Future was drawn from the 4-H Study dataset by Schmid et al.⁵³. Financial Security is a subscale on the measure of Hopeful Future Expectations. This measure includes 11 items. Financial security is a subscale with 5 items and describes expectations of situations that participants will experience in life. The items were measured on a five-point Likert scale with responses ranging from 1 (Very Low) to 5 (Very High).</p>	<ol style="list-style-type: none"> 1) Be able to buy the things you need. 2) Be able to do the things you want. 3) Have a job that pays well. 4) Be able to live wherever you want. 5) Be safe.

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