How College Students Make Decisions

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My research lab investigates real-life decision making. Many of my studies have centered around college students: High School Students Choosing a College, College Students Choosing Courses, College Students Choosing Housing Options. And the one I’ve studied the most, College Students Choosing a Major.
In their own words.....

Carleton students (first surveyed as winter term frosh in 2002) responded to the following prompt:

Please describe what the process of considering possible majors has been like for you so far. What has made this process difficult at this point? What has made it easy? What do you expect to be difficult or easy about the decision in the long run?
Participant 102

I consider possible majors to be in disciplines that are interesting to me. For the most part, the course material covered by the major should stimulate my analyzing and processing skills. In my last two terms, it appears that I tend to take classes in the social sciences. However, I don’t know how committed I am to a specific discipline. I think the process of “major shopping” is exciting because I get to try out a variety of subjects.
Thus far the process of considering majors has been overwhelming to the point where thinking about the decision causes anxiety and panic. Being interested in several different subject areas and trying to fit intro courses and more advanced courses from each of these subject areas into my course load has been the most difficult aspect this far. Having a general idea of what career I’d like to end up in has made choosing a subject area to focus in easier.
Participant 117

It hasn’t been very difficult because I think I already know what I am going to major in. Since junior year of high school I’ve wanted to major in political science. I think I probably will not change my major.
Participant 125

The process of choosing a major has been very confusing for me because I don’t really know what I’m interested in. Looking back to high school, I try to see which classes I liked to consider them as possible majors, but I’m not sure if it was just that one class that I liked and not something I would major in. As a freshman, I have to take many left over courses I don’t want to take, I think this impedes my decision-making process because I end up taking classes that don’t interest me. Also, many classes are not available every term, so even with a good draw number the next term, if the class is not available then it doesn’t help. I think I won’t be able to find a major I’m really interested in.
I have been looking at the courses offered by individual departments and trying to find a department in which I will be happy and satisfied taking most of their offered courses. It is difficult for me to go solely off course descriptions though because I have to consider how good the teachers are in the department. For example, I thought I may pursue English as a major but I took an intro lit class this fall and disliked the material and the professor, thus I am not seriously thinking about English as a major. This process of choosing is extremely difficult for me because I don’t want to ‘mess up’ or make any mistakes – also I am worried about having enough time to complete all requirements and still take classes outside the major. It’s really stressful to not know what you want to major in – or do with the rest of your life.
Participant 124

A lot of my decision has to do with which major will help me get a good job out of college. Essentially, I’d like to make $ so that I can pay for part of my brother’s education and also help out my parents in paying debt/mortgage, etc. I’d like to major in a concrete field, economics, math. I feel that I need to because these fields would be better suited to the relatively-well-off job I’m seeking. It’d be hard to major in something like Asian studies for the same reason.
Participant 135

I came to college with a pretty good idea of what I want my major to be, this is partially to give myself more direction and partially to satisfy my parents who are concerned about me being “one of those useless liberal arts majors” (they are both chemists). Back in high school I wanted to be a history major. That was vetoed by my mother and I chose something pretty darn close but such that it would not antagonize my mother, International Relations. Now that I have started college and actually took an IR class and classes in other disciplines as well, I don’t really know for a fact what I want to major in, but for now will keep saying that it’s IR.
Participant 144

I haven’t thought that much about my major so far just because I feel that it’s not that important. I’ll ultimately end up doing whatever I feel is right for me so when the time comes I’ll go with what feels right.
I haven’t really seriously thought about a possible major until this term. I had thought about biology because I really enjoy aspects of it, but I’m not good at it. This has been a very tough thing to come to terms with. Once that option was gone, I’ve just been taking classes in things I’m interested in, and I’m finding they could be possible majors because I enjoy them and I am doing well in the course. I think the hardest part coming up will be to decide on which of these things I want to focus and how to possibly work it so I can get a few areas combined into one.
Some Observations

- Wide range of attitudes toward this decision
- Wide range of perceived “scope”/future ramifications of this decision
- Wide range of levels of confidence in one’s own ability to make this decision without making “mistakes”
Some Themes

- Major = something that provides direction
- Major = something that defines identity
- Major = something that prepares you for career/future
- Major = something you’re good at
- Major = something your parents allow/support
- Major decision = irrevocable choice
- Major decision = something with a right answer
Image: A dark tunnel that gets narrower
The college “major decision”

- Is one some students report finding stressful
- For many, is a “life-framing” choice
- Offers many possibilities
- Offers a plethora of potential sources of information
- Could be made using a wide variety of criteria
- Is on a known timetable
College students as decision-makers:

- Relative novices at important personal decision-making
- Actively exploring issues of values, careers, identity
- Beginning to possess new cognitive abilities to think in formal and complex ways
- Separating own goals from those of parents
Developing an Identity (after Marcia, 1966)

<table>
<thead>
<tr>
<th>Crisis (Period of doubt and active exploration)?</th>
<th>Commitment (Firm choice made)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Diffusion</td>
</tr>
<tr>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Foreclosure</td>
</tr>
<tr>
<td></td>
<td>Moratorium</td>
</tr>
<tr>
<td></td>
<td>Achievement</td>
</tr>
</tbody>
</table>
Epistemological Development (after Perry, 1970)

Dualism
(right answers vs. wrong answers; true experts vs. posers)

Multiplism
(there are no right answers—it’s all subjective!)

Relativism
(some answers are better than others)
Cognitive Capacity Limitations

- Working Memory limits
- Attentional limits
- Time pressures
- Information overload
Typical Advice on Making Good Life Decisions

- Prioritize your goals and values
- List all your options
- Gather thorough information about each option with respect to each goal
- Select the best option
### Content Variables

<table>
<thead>
<tr>
<th>Content Variables</th>
<th>Mean % Round 1 returners N = 32</th>
<th>Mean % Round 2 returners N = 32</th>
<th>t (31 df )</th>
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<tbody>
<tr>
<td>Special Major</td>
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<td>13</td>
<td>-1.79 +</td>
</tr>
<tr>
<td>Double Major</td>
<td>6</td>
<td>13</td>
<td>0.57 ns</td>
</tr>
<tr>
<td>Premed/law/educ program</td>
<td>13</td>
<td>3</td>
<td>1.79 +</td>
</tr>
<tr>
<td>Concentration</td>
<td>6</td>
<td>10</td>
<td>-1.00 ns</td>
</tr>
<tr>
<td>Considering social science</td>
<td>75</td>
<td>75</td>
<td>0.00 ns</td>
</tr>
<tr>
<td>Considering nat sci/math</td>
<td>63</td>
<td>53</td>
<td>1.36 ns</td>
</tr>
<tr>
<td>Considering art/lit/humanities</td>
<td>88</td>
<td>78</td>
<td>1.36 ns</td>
</tr>
</tbody>
</table>
## Performance Measures

<table>
<thead>
<tr>
<th>Performance Variables</th>
<th>Mean Round 1 returners N = 32</th>
<th>Mean Round 2 returners N = 32</th>
<th>t (31 df)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of options</td>
<td>4.69</td>
<td>3.66</td>
<td>3.80***</td>
</tr>
<tr>
<td>Number of divisions</td>
<td>2.25</td>
<td>2.06</td>
<td>1.65 ns</td>
</tr>
<tr>
<td>Number of factors</td>
<td>6.25</td>
<td>7.56</td>
<td>-3.96***</td>
</tr>
<tr>
<td>Number of categories</td>
<td>5.22</td>
<td>5.88</td>
<td>-1.89+</td>
</tr>
<tr>
<td>Number of information sources</td>
<td>3.03</td>
<td>2.72</td>
<td>0.97 ns</td>
</tr>
</tbody>
</table>
Affective Ratings

Certain | Comfortable | Rushed | Stressful | Difficult | Enjoying

- First-Year
- Sophomore
Descriptive Ratings

- Independent
- Specific Criteria
- Using Intuition
- Ruling Out Options
- Making Tradeoffs
- Habits or Policies

First-Year
Sophomore
Descriptive Ratings

![Bar chart showing ratings for different categories: Satisfied with Info, Guided by Values, and Future Implications. The chart compares First-Year and Sophomore categories.]
### How Well Do Students Appraise Options, Given their Goals

<table>
<thead>
<tr>
<th>Factor</th>
<th>Importance Weight</th>
<th>Option 1 Psychology</th>
<th>Option 2 Biology</th>
<th>Option 3 English</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Class Size</td>
<td>9</td>
<td>8</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Professor Quality</td>
<td>7</td>
<td>7</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Major Requirements</td>
<td>10</td>
<td>5</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Career Opportunities</td>
<td>6</td>
<td>6</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>Lab Requirements</td>
<td>3</td>
<td>7</td>
<td>3</td>
<td>9</td>
</tr>
</tbody>
</table>

**Predicted Value from**

<table>
<thead>
<tr>
<th>Model</th>
<th>Value 1</th>
<th>Value 2</th>
<th>Value 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>TC Model</td>
<td>5</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>EW Model</td>
<td>33</td>
<td>27</td>
<td>30</td>
</tr>
<tr>
<td>Full MAUT Model</td>
<td>228</td>
<td>177</td>
<td>208</td>
</tr>
</tbody>
</table>
Calibration Coefficients with Normative Linear Models

- Top Criterion Model with Holistic Ratings
  \[ r = 0.66 \]

- Equally Weighted Criteria Model with Holistic Ratings
  \[ r = 0.72 \]

- Multiattribute Utility Theory (MAUT) Model with Holistic Ratings
  \[ r = 0.72 \]
Conclusions

- Over time, the decision becomes more focussed, with the number of options (but not always the number of criteria) decreasing.
- Affective reactions to the process become more positive over time.
- Descriptions of how they go about the process remain fairly stable.
- From a normative standpoint, they seem to perform rather well.
Take Home Messages for Advisors

- Encourage and reassure, perhaps by sharing own story
- Confront negative stereotypes of a college major (e.g., it doesn’t completely determine your career, it’s only one aspect of identity, it’s not a narrow tunnel, there’s probably not one true perfect choice)
- Suggest ways of managing information overload
- Model trust in the process and trust in the student
Katy had no idea which major she wanted to declare. She carefully investigated 10 different possibilities, comparing them on everything from number of courses required to the average starting salary of recent grads.

Question:

Does this suggest that she will be equally methodical in choosing a major or choosing a summer job?

Little relevant previous work exists on consistency in real-life decision making.
Other Studies of Real-Life Decision Making

• Existing studies of real-life decision making often center upon a single decision, such as a health-related or consumer decision. These cannot tell us much about consistency in decision making.

• Repeated real-life decision making has been studied in experts, although their extensive (10 + years) experience in a field may qualify them as a special population.

• My lab has studied real-life decision making among non-experts, for several different decisions: choosing a college, choosing a major, choosing a birth attendant, choosing an educational program for a first-grader.
General Pattern of Findings

• Although there were other differences among studies, several common patterns have emerged:
  • Participants constrain the number of options they consider (2-5 at any one time).
  • They also constrain the number of factors they use to decide among options (3-9).
  • In the longitudinal studies, the number of options considered shrank over time the number of criteria used did not.
  • There were slight effects of education and/or ability on the amount of information considered.
People’s intuitive “calibration” with the predictions of normative linear models was surprisingly good in previous studies.

- Average correlation around .70; range from .54 to .90.
Caveats

• However, these studies only looked at consistency over time for a single decision.

• We don’t know how well these patterns of behavior would apply to other consequential decisions made by the same participants.

• We needed a study of the same group of participants making a series of important real-life decisions.
Two Opposing Predictions

1. People have stable decision-making styles (e.g., rational, intuitive, dependent, avoidant, spontaneous) that they bring to decisions they make. This tradition predicts consistency across decisions.

2. Individuals’ decision making is affected more by specific aspects of a particular decision than by general, preexisting decision-making styles or proclivities. This tradition predicts a lack of consistency across decisions.
Study Design

• We examined both kinds of consistency through a longitudinal study of first-year college students who were followed in four sessions over a 14-month period.

• We asked them about different important decisions including:
  ✤ choosing courses for an upcoming term (for 3 different terms)
  ✤ choosing a major (once in first year, once in second year)
  ✤ plans for the upcoming summer after their first year
  ✤ plans for student housing in the second year
For each decision, we counted

- the number of options the participant reported under active consideration
- the number of criteria they reported using to decide among these options
- the calibration of the participants’ holistic ratings of the overall goodness of options with the predicted ratings of various linear models

We then examined the degree to which corresponding measures from different decisions were intercorrelated.
Method

- Participants:
  - 149 first year students (101 in the class of 2013; 48 in the class of 2014)
  - 51 male, 98 female
  - Participate in up to 4 sessions over their first 18 months of college
  - (132 of the participants participate in all sessions)
### Results

<table>
<thead>
<tr>
<th>Decision</th>
<th>Mean Number of Options</th>
<th>Mean Number of Criteria</th>
<th>Decision Map Size&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choosing Courses for 2&lt;sup&gt;nd&lt;/sup&gt; Term&lt;sup&gt;b&lt;/sup&gt;</td>
<td>4.75</td>
<td>5.87</td>
<td>29.08</td>
</tr>
<tr>
<td>Choosing Courses for 3&lt;sup&gt;rd&lt;/sup&gt; Term</td>
<td>4.44</td>
<td>5.68</td>
<td>25.36</td>
</tr>
<tr>
<td>Choosing Academic Major-1&lt;sup&gt;st&lt;/sup&gt; year&lt;sup&gt;c&lt;/sup&gt;</td>
<td>4.85</td>
<td>4.81</td>
<td>24.21</td>
</tr>
<tr>
<td>Choosing Courses for 4&lt;sup&gt;th&lt;/sup&gt; Term</td>
<td>4.90</td>
<td>5.78</td>
<td>28.20</td>
</tr>
<tr>
<td>Choosing Housing for 2&lt;sup&gt;nd&lt;/sup&gt; Year</td>
<td>4.55</td>
<td>4.77</td>
<td>22.72</td>
</tr>
<tr>
<td>Choosing Summer Plans after 1&lt;sup&gt;st&lt;/sup&gt; Year</td>
<td>4.15</td>
<td>4.79</td>
<td>25.05</td>
</tr>
<tr>
<td>Choosing Academic Major-2&lt;sup&gt;nd&lt;/sup&gt; Year&lt;sup&gt;d&lt;/sup&gt;</td>
<td>3.75</td>
<td>5.08</td>
<td>19.41</td>
</tr>
</tbody>
</table>
Fair amount of consistency for structural measures

However, looking consistency across decisions yielded a mixed picture. Students who listed many criteria for one decision tended to do so for others.

However, there was not a lot of consistency for calibration measures.

Adaptive decision making (Payne, Bettman & Johnson): individuals adopt different strategies when they face different decisions. Essentially, this hypothesis holds that individuals’ decision making is affected more by specific aspects of a particular decision than by general, preexisting decision-making styles or proclivities.
When we asked students about their decision-making styles, they were all too happy to report general tendencies. Some reported their approach as objective and detached, gathering much information and performing explicit analyses. Others described a more holistic and intuitive approach. Some characterized their process as operating autonomously, and others described relying on others’ input to navigate the process. Some students said they approached decisions in a more spontaneous manner, and some declared that they try to avoid making decisions whenever possible.
Results

- Results showed few statistically significant correlations between stylistic measures and behavioral measures of decision making, in either the amount of information considered or the way in which the information integration tracked predictions of linear models of decision making applied to each participant’s data.

- However, there were consistent correlations, across the 7 decisions, between stylistic measures and affective reactions to, or retrospective descriptions of, episodes of decision making.
Possible Interpretation

Decision-making styles instruments may better reflect the construction of narratives of self as a decision maker more than they do actual behavior during decision making.


