

# **DISC Analysis of Cal Poly CM Students and Industry Professionals**

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This research analyzes why type D personality, as defined by the DISC personality assessment of 123test, was by far the most common personality type in the Cal Poly Commercial Construction class of winter 2022. This is interesting, as type D is the rarest personality type, making up ~ 9% of the global population (D Style - Type D Personality, n.d.). This was investigated by collecting DISC data from other Cal Poly Construction Management students to see if winter 2022 was an outlier, or if D type prominence is indeed a Cal Poly trend. The results of this research confirm that type D is the most common personality type among Cal Poly Construction Management students. Additional DISC data gathered from construction management industry professionals, suggests that type D is also the most common DISC personality type in the construction management industry. Notably, this study also suggests that type C personality is exceedingly rare in the construction management industry.

## **Introduction/Background/Purpose**

Part of the Cal Poly Construction Management program is a Commercial Construction class, where for the past several quarters, each student has been required to take a version of the well-known DISC personality test. This version of the DISC consists of four personality types: Dominance, Influence, Steadiness, and Compliance. People high in dominance are goal oriented, direct, and enjoy competition (DISC Dimension: Dominance, n.d.). Individuals high in influence are talkative optimistic, lively, are people focused, and influence others (D Style - Type D Personality, n.d.) High steadiness is related to patience, calm, control and a high willingness to help others, particularly those they see as friends (DISC Dimension: Steadiness, n.d.). High compliance individuals are logical, analytical, and correct. They are task focused and get things done accurately (D Style - Type D Personality, n.d.). In commercial construction class, after taking the test, students receive what percentage of each personality type constitutes their personality (Ex. D=65%, I=25%, S=8%, C=2%). Then, the students are split into groups based on their primary DISC type (Ex. Type D). When I took the class, most students scored type D. This is intriguing as D is the rarest type, making up approximately 9% of the general population (D Style - Type D Personality, n.d.). There is no current consensus explaining this difference. In this paper, I seek to collect and analyze additional data to illuminate this gap in understanding.

**Key Words:** DISC Type, Industry Professionals, Cal Poly Construction Management Students, Personality

## Literature Review

### *Use of Personality Profile Assessments in the Construction Industry*

Many industries use personality tests to reduce employee turnover through intelligent hiring, positioning, and management. This study explores if the construction industry does this as well. A telephone survey of 78 randomly selected contractors from the ENR Top 400 Contractors was conducted over a period of 45 days, and it was determined how many of the contractors used personality profile assessments, for what purpose, and if the assessments were useful in reducing employee turnover. The survey respondent for each company was the HR representative, and the results revealed that 33% of surveyed companies used personality tests for various purposes (hiring, leadership, promotions, and placement). The most popular test used by surveyed companies was the DISC (N=5), with the next most popular being the MBTI and The Predictive Index (N=2 each). Of the 26 companies that utilized personality tests, 58% agreed to some degree (either strongly agree, agree, or somewhat agree) that these tests helped reduce employee turnover. The paper concludes by suggesting that all companies should use personality profile assessments for reducing employee turnover and for other purposes they deem appropriate.

### *A Study on the Effectiveness of the DISC Personality Assessment*

The researcher marked that the DISC personality assessment is used extremely widely, by thousands of organizations, including government institutions, Fortune 500 Companies, NGOs, and small businesses, with 75% of Fortune 500 Companies using the DISC. Given the extensiveness of use, the researcher deemed it important to evaluate the test's effectiveness. In this dissertation, the researcher drew conclusions about the effectiveness of the DISC by conducting a literature review and survey. The literature review covered 17 different case studies; all 17 organizations praised the effectiveness of the DISC. The literature review also included a section analyzing DISC criticisms: the main criticism being it is an insufficient tool to fully understand beings as complex as humans and therefore should not be used for hiring. Furthermore, DISC scores do not predict job success and do not communicate someone's skills or abilities.

The survey conducted by the researcher analyzes the DISC's accuracy, usefulness for recruitment, usefulness for self-assessment, usefulness for team building, usefulness for employee motivation, degree of simplicity to take, and usefulness for understanding users core strengths and weaknesses through having respondents answer the above statements using a five point Likert Scale (Ex. The questionnaire is not complicated and simple to use: Strongly Agree, Agree, Partially Agree, Disagree, Strongly Disagree). This survey gathered 385 responses from 33 different countries, and every statement was answered overwhelmingly affirmative. These results led the researcher to conclude that the DISC assessment is effective for all the purposes mentioned above.

### *The Relationship Between Personality Types and Project Management Team Satisfaction*

This research explores the relationship between construction project team personality type, and project team satisfaction. This study analyzed the project engineers and project managers of two separate project teams, from the same commercial general contractor, using the NERIS Type Explorer®. The NERIS Type Explorer® breaks an individual's personality down into 5 categories, with the individual being assigned one of two dimensions for each category (Ex. In the category "Mind" an individual can be marked as "Introverted" or "Extroverted"). The researcher averaged the personality profile across team members to create an "average personality type" for each of the two teams. Each team member then completed a Likert Scale survey designed to identify their team's level of "communication, cooperation, energy, and synchronization". Project Team A, mostly heterogenous, averaged ENFJ-T (51% Extraverted, 52% Intuitive, 56% Feeling, 70% Judging, and 51% Turbulent). Project Team B, mostly homogenous, averaged INFJ-A (61% Introverted, 53% Intuitive, 67% Feeling, 69% Judging, and 62% Assertive).

Despite results of different average personality, comprising different levels of homogeneity, there was no significant difference in team satisfaction. There may be a small relationship between extraversion and cooperation, communication, and energy as the more extraverted team (Team A), reported slightly higher levels of all three. “The Relationship Between Personality Types and Project Management Team Satisfaction” did not demonstrate conclusive differences between team personality composition and satisfaction; whether homogeneity of the team plays a role in team satisfaction is also inconclusive.

*Student Personality Style and First-Year Academic Performance in a Doctor of Pharmacy Program*

An increasing percentage of pharmacy students are encountering academic difficulty. As an attempt to understand and help this issue there have been various hypotheses of useful indicators of academic success and failure. The researchers hypothesized that conscientiousness would be positively correlated with academic success (chiefly measured by GPA). This research utilizes a version of the DISC Assessment represented as a circle broken down into four quadrants: D(Dominance), I(Influence), S(Steadiness), and C(Conscientiousness). Each quadrant represents a personality style, and two adjacent quadrants combine to form a dimension; each dimension says something about the individual.

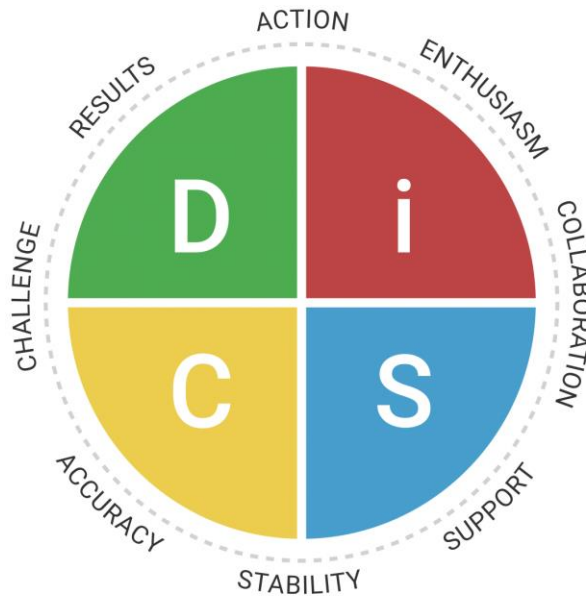


Figure 1. DiSC quadrants and characteristics (A Wiley Brand, n.d.)

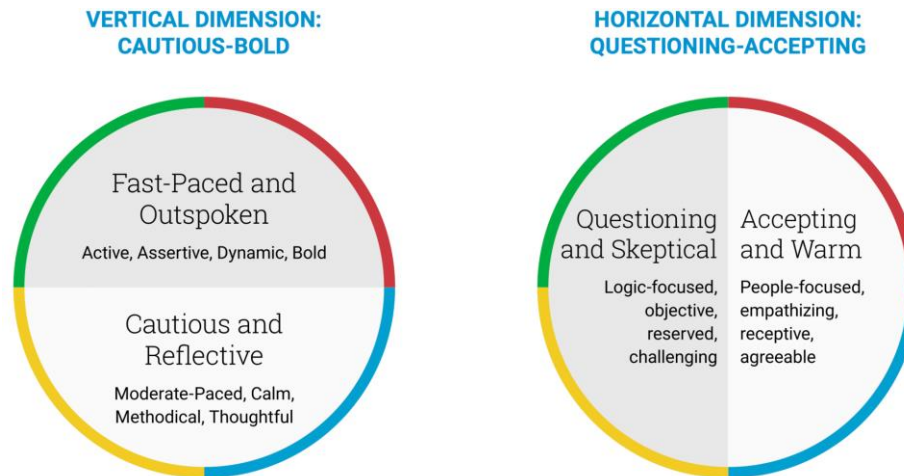


Figure 2. DiSC dimensions (A Wiley Brand, n.d.)

From the years 2019-2022 DiSC data for 304 first-years from the West Virginia School of Pharmacy was collected (95.6% of all possible first years). Of the 304 respondents, 155 reported a primary quadrant of C (51.0% of respondents). Demographic data including age, gender, and bachelor's attainment status was also collected. The software GraphPad was used to compare students DiSC personality styles with academic success, and there was no correlation found between academic success and any personality quadrant.

## Methodology/Analysis

Research Question: why was personality type D starkly overrepresented in my Winter 2022 Commercial Construction class, and is this representative of the construction industry as a whole?

The first step was finding out whether the personality composition of my class (Winter Quarter, 2022; majority D) was an outlier, or indicative of Cal Poly Construction Management (CPCM) as a whole. Commercial construction class is a class that all CPCM students take, therefore it is reasonable to deduce that a large enough sample of CPCM commercial construction students reflects the general CPCM population of a given time period. Thus, DISC personality data from multiple sections of Cal Poly Commercial Construction was gathered. The version of the DISC assessment utilized by CPCM Commercial Construction is from 123test. The existing two Commercial Construction professors provided me with several academic quarters worth of anonymous student DISC data. The second step was to gather DISC data from Construction Industry professionals to compare with that of CPCM students. Data was gathered via survey, where construction industry respondents took the same version of the DISC that students took, and input their results, along with answering additional related questions.

1. What is your predominant DISC personality type?
  - Choose one:
    - D
    - I
    - S
    - C
2. My DISC personality has affected my experience in the construction industry
  - Choose one:
    - Strongly Agree
    - Agree

- Neutral
  - Disagree
  - Strongly Disagree
3. Please elaborate on your response to question #2
    - Written response
  4. Which trait is most important for success in the construction industry?
    - Choose one:
      - D
      - I
      - S
      - C

The industry professionals who took this survey are members of the Cal Poly Construction Management Advisory Council (CMAC), industry recruiters, and individuals on a Cal Poly Senior Project Industry Support list. CMAC members are comprised of Cal Poly alumni who have been or currently are in the Construction Management field. Members of the industry support list are Cal Poly alumni from every level of construction operations, including but not limited to, owners, presidents, vice presidents, project managers, superintendents, estimators, project engineers, and field engineers. The survey was anonymous and may also have been answered by “industry recruiters”. CMAC members and those on the Cal Poly Senior Project Industry Support list are directly significant because they occupy/occupied industry roles that a CPCM graduate may one day come to occupy, it is less likely that a CPCM graduate may become an industry recruiter, serving a human resources role.

### Results/Summary

Professor A provided data for four class sections, one per school quarter (Spring 2022, Fall 2022, Winter 2022, and Spring 2023), averaging 23 per class. Professor B provided data for three class sections, one per school quarter (Fall 2022, Winter 2022, and Spring 2023), averaging 24 per class.

	Professor A				Professor B			
	Spring 2022	Fall 2022	Winter 2022	Spring 2023	Spring 2022	Fall 2022	Winter 2022	Spring 2023
<b>D</b>	10	10	8	10	N/A	11	10	6
<b>I</b>	4	5	6	7	N/A	4	4	4
<b>S</b>	5	3	7	2	N/A	4	4	9
<b>C</b>	3	5	1	3	N/A	6	6	5
<b>Total</b>	22	23	22	22	N/A	25	24	24

Figure 3. CPCM student DISC data by professor(numerical)

	Professor A				Professor B			
	Spring 2022	Fall 2022	Winter 2022	Spring 2023	Spring 2022	Fall 2022	Winter 2022	Spring 2023
<b>D</b>	45%	43%	36%	45%	N/A	44%	42%	25%
<b>I</b>	18%	22%	27%	32%	N/A	16%	17%	17%
<b>S</b>	23%	13%	32%	9%	N/A	16%	17%	38%
<b>C</b>	14%	22%	5%	14%	N/A	24%	25%	21%
<b>Total</b>	22	23	22	22	N/A	25	24	24

Figure 4. CPCM student DISC data by professor(percentage)

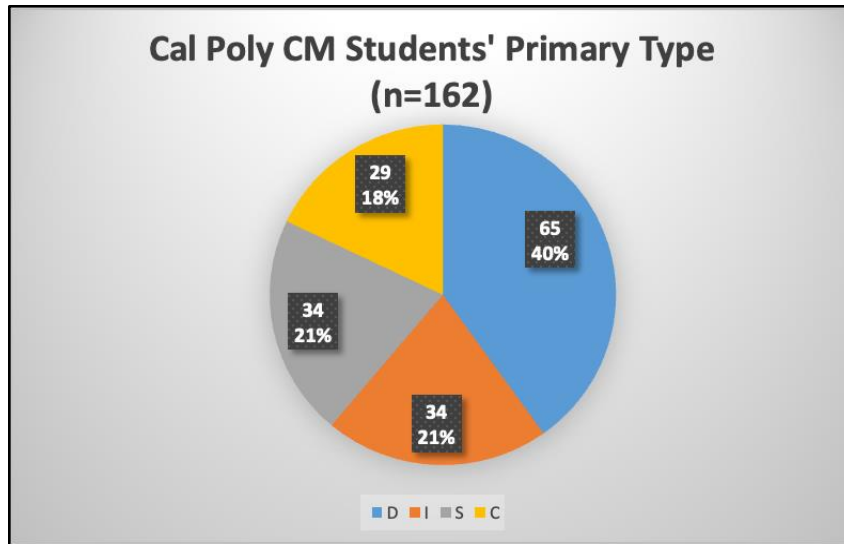


Figure 5. CPCM student DISC data

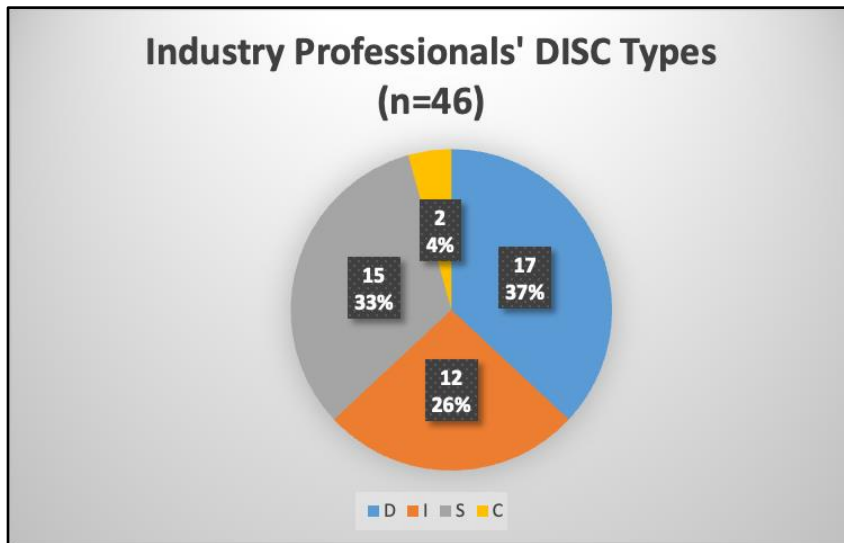


Figure 6. Industry professionals DISC data

For construction management students at Cal Poly, Dominance was the most prevalent personality type (see Figure 5, D=40%), with each student approximately twice as likely to score D than they are any other personality type (Figure 5, I=21%, S=21%, C=18%). Type D was also the most prevalent among surveyed industry professionals, though not by as large a margin as CPCM students (D=37%, I=26%, S=33%, C=4%) While Type C was the least common type among Cal Poly CM students and industry professionals, type C was drastically underrepresented among industry professionals (C=4%, 2/46) compared to CPCM students(C=18%).

Among industry professionals, “I” was most likely to be marked as the most important trait for success in the construction industry (Figure 7, 48%), and C was the least likely (Figure 7, 9%). 65% of respondents surveyed marked that their own personality trait as most important for success in the construction industry.

## Discussion/Conclusions

CPCM has a significantly greater representation of type D than the general population. Research suggests that CPCM may have a greater representation of type C than CM industry. Based on concordance between CPCM student data and industry professional data (D=40% and D=37%, respectively), it is likely that type D is a prominent character trait in the construction *management* industry, and this is why the Cal Poly commercial construction class of winter 2022 had high levels of type D. While type C was the least prevalent trait among CPCM students (18%) and industry professionals (4%), it stands out that only 2/46 industry professionals surveyed received type C. One explanation for this is that those with the Compliance DISC type, are less likely to occupy positions of management, and the industry professionals surveyed (being from CMAC or the “Friends of Cal Poly Senior Project” list) were more likely to be in upper management positions. A second hypothesis is, as individuals transition from student life to climbing occupational hierarchies, they take on roles and responsibilities that change their perception of themselves, and are less likely to test as type C. A third hypothesis is, the criteria that Cal Poly uses to accept students into the CM undergraduate program selects more for type C than it has in the past (when the industry professionals graduated from Cal Poly). It may be interesting to see what will happen as larger numbers of type C enter the industry. If CPCM students move into the industry, continuing to score type C at a similar rate, and underrepresentation of type C does represent the CM industry, there could be challenges in adapting. Furthermore, if an increase in type C is a trend not just in CPCM, but in higher education as a whole, it will be interesting to see how various industries adapt.

*CPCM students and surveyed industry professionals are involved in management of the construction industry, and data does not represent those in labor or other sectors of construction.*

## Additional Research

To see if growing numbers of type C are particular to CPCM or general higher education, it will be useful to replicate the methodology of this research (DISC survey of undergraduate program and corresponding industry) for other fields of occupation/study. CPCM data collected is representative of CPCM; to verify CM industry professionals’ results are representative, a larger sample should be collected. This sample should extend beyond Cal Poly alumni and should not include those outside construction operations management roles (HR, recruiting, etc.). Research should also be done to find the DISC makeup of the United States because there may be DISC differences between countries, states, cities, etc. and knowing this information would put into perspective smaller data pools such as that of this study and others.

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