



that for a student, failing an exam or receiving a poor grade on an assignment can result in a shift to state-orientation, especially for students who already have that tendency.

There are three action-state dimensions that reflect how individuals remain focused on goals or how they get diverted.

- Hesitation (state) versus initiative (action) is the extent to which a person is able to engage in planned, goal-directed behavior. An action-oriented person has little trouble beginning and maintaining effort on a task. A state-oriented individual, on the other hand, will struggle to get to work and might procrastinate on tasks needed to achieve goals.
- Preoccupation (state) versus disengagement (action) has to do with how a person handles distractions. The action-oriented person is not easily distracted; when a distraction occurs (receives a phone call) he or she easily returns to the goal-oriented task. The state-oriented individual, on the other hand, has a hard time thinking about the distraction and therefore struggles to return to work. Interruptions that induce negative emotions such as anxiety or annoyance can be particularly hard to overcome.
- Volatility (state) versus persistency (action) has to do with continuing to work on a task when there is no distraction. The action-oriented student can set a mini-goal for the day, such as reading a chapter for class, and maintain effort until it is reached. The state-oriented student struggles to maintain effort and can become bored and distracted before completing the day's goal.

Action-state orientation has been found to predict academic performance (P << /MCID 1, 2007)-1(h)-9.rlns4

Method

Participants and Procedure

We collected surveys from 292 engineering students from three electrical engineering classes during fall 2021 semester. Three-fourths of the students were majoring in either electrical (47%), mechanical (19%) or civil (10%) engineering.

Results

Descriptive statistics for the study variables can be seen in Table 1. For study behaviors there is a total score for all items plus individual scores for environment management, study strategies, and procrastination. Action-state orientation has separate scores for each of the three dimensions. The table includes means, standard deviations, minimum and maximum scores for each measure. Also included are coefficient alphas as a measure of internal consistency reliability. As can be seen in all but two cases the alpha exceeded the generally accepted minimum for research of .70 (Nunnally & Bernstein, 1994). Procrastination had an alpha of .42, suggesting that students who indicate doing one of these behaviors do not necessarily do the others. For example, students who stay up all night to do schoolwork are not necessarily procrastinators who also wait until the night before to do assignments. The low coefficient alpha for volatility was not unexpected given it is close to the .51 reported by Diefendorff et al. (2000).

Table 2 shows correlations among all variables in the study. Results showed that all three dimensions of action-state orientation had statistically significant correlations with the total score of all positive study behaviors; action-oriented students engaged in more productive academic activities. Hesitation ($r = .42$) was most strongly related followed by Preoccupation ($r = .16$) and Volatility ($r = .13$). Correlations of action-state orientation with the more specific dimensions of study behavior showed a somewhat different pattern. Hesitation continues to be the strongest correlate among the action-state subscales with correlations in the .30s for all three behavior subscales. Preoccupation correlates a consistent .12 with all three behavior subscales, although it missed statistical significance with procrastination (this correlation was slightly lower than the others and was rounded to .12). Volatility correlated significantly only w

future research will be needed to demonstrate that connection. As noted earlier, action-state orientation has been linked to grade point average in prior studies, but not in engineering. For example, Jaramillo and Spector (2004) studied marketing students.

The results of this study are encouraging in showing that action-state orientation is related to the study habits of engineering students. Future research will be needed to tie these findings to academic outcomes. More importantly, intervention research is needed to see if state-oriented students can be taught effective strategies to behave in a more action-oriented way that overcomes their natural tendencies. If successful, such interventions might enable state-oriented engineering students to be more successful in school and beyond.

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Table 1

Descriptive Statistics

Variable	Mean	SD	Minimum
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Table 2

Correlations Among Study Variables