Predicting Motivation and Learning Strategies in Community College Students

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ABSTRACT. The present study examined the relationship among student characteristics, types of academic motivation, learning strategies, and grade point average (GPA). Community college students in psychology courses (N = 131) completed an online survey, which assessed 3 types of academic motivations (intrinsic, extrinsic, and amotivation), learning strategies (deep and surface), academic self-concept, and demographic variables. Results suggested that academic self-concept (\(\beta = .30, p < .001\)) and age (\(\beta = .21, p = .02\)) added to the prediction of intrinsic motivation. Academic self-concept also significantly predicted amotivation (\(\beta = –.60, p < .001\)). The model tested significantly predicted deep learning strategies (\(\Delta R^2 = .37, p < .001\)) and surface strategies (\(\Delta R^2 = .13, p < .001\)) but not consumeristic motivation (\(\Delta R^2 = –.02, p = .78\)) or GPA (\(\Delta R^2 = –.01, p = .53\)). Overall, the results provided mixed support for the proposed model of student learning in which student characteristics predict motivation, which is related to learning strategies and academic performance. Results are discussed in terms of implications for multifactor models of learning in the community college population.

Keywords: motivation, learning strategies, academic self-concept, community college students, women’s health

Several models of student learning have been proposed in the extant literature, including those that focus on the affective, motivational, and cognitive aspects of learning (Ahmed & Bruinsma, 2006; Pintrich, 1994; Valle et al., 2003; Weber et al., 2011). These models have been well-documented in studies of traditional, four-year undergraduate students (also known as university students) or in studies outside the United States (Algharaibeh, 2020; Brotheridge & Lee, 2005; Erdogdu, 2019). However, these models have not been applied to community college students. Community college students are typically older than traditional university students, are from a wider range of ethnic backgrounds, and more likely to work than university students (U.S. Census, 2023). Age and academic self-concept are positively related to intrinsic motivation in previous research (Ahmed & Bruinsma, 2006; Brotheridge & Lee, 2005). In addition, studying motivation, learning strategies, and academic success in this diverse group of students who represent approximately half of the undergraduate population in the United States (U.S. Census, 2023) can provide guidance for instructors and administrators at these open-access institutions to support student success and contribute to educational equity. These differences in identity may impact student learning. Therefore, it is
important to determine whether these models replicate among community college students.

Recent studies have suggested that consumeristic motivation, motivation based on an extrinsic reward of obtaining a job, may be related to learning behaviors (Bunce & Bennett, 2019; Lashbrook, 2010; Simons et al., 2004). The lack of inclusion of consumeristic motivation in previous student learning models is a clear gap in the literature. As such, our model sought to integrate consumeristic motivation in predicting learning strategies and academic success. The modified model replicates previous examinations of student learning with a new, distinct, population: community college students. For the present study, we aimed to explain how student characteristics are related to academic motivation, with the addition of consumeristic motivation, to learning strategies and academic success.

**Academic Motivation**

The motivational aspects of learning included in the present model consist of intrinsic motivation, consumeristic, and amotivation motivation. Intrinsic motivation involves performing an activity for enjoyment rather than for an external reward or to attain a separate more instrumental outcome (Ryan & Deci, 2000). The relationship between students’ academic intrinsic motivation, learning behaviors, and academic success or performance has been well-documented in university students, but not in community college students (Algharaibeh, 2020; Boyle et al., 2003; Clarke et al., 2014; Donche et al., 2013; Erdogdu, 2019; Kapp et al., 2020; Prat-Sala & Redford, 2010; Vansteenkiste et al., 2004). Simons and colleagues (2004) found that higher intrinsic motivation led to the use of more efficient learning strategies and better academic performance. In addition to examining affect, motivation, and cognitive factors, future studies should include more demographic variables that differentiate community college students from university students (e.g., preparation for college, work status, family responsibility) to provide a complete model of factors that could affect this unique population of students. Examining these learning models for community college students in more detail could help educators focus on the concepts that are most relevant to good study skills and academic success. Similarly, normative models of goal orientation linked students’ ability to master academic material with higher levels of performance (Pintrich, 2000). The literature consistently supported the positive relationship between intrinsic motivation, learning strategies, and academic performance in university students. However, studies have not examined whether this relationship holds in the community college population.

Amotivation is the lack of motivation and is assumed to be at the opposite end of the continuum from intrinsic motivation (Ryan & Deci, 2000). Previous literature has suggested that students were prone to self-handicapping and lower academic affect when they were less motivated to master material (Pintrich, 2000). Several studies have found that amotivation is negatively correlated with grades (Algharaibeh, 2020; Kapp et al., 2020; Mauer et al., 2013; Vanthournout et al., 2012). Amotivation has been related to dropping out of college and less effective learning strategies in university students (Donche et al., 2013; Vallerand & Bissonnette, 1992; Vanthournout et al., 2012). These findings suggest that intrinsic motivation is related to effective learning strategies and academic success, whereas amotivation is related to less effective learning strategies and lower grades. The findings are a bit less clear when examined in the community college population.

Few studies have examined motivation in community college students and these results have been mixed. Liao and colleagues (2012) found that, although motivation was related to academic achievement in international community college students, there was no relationship between the variables in domestic college students. Simon and colleagues (2015) found that motivation was related to achievement and persistence in community college students in the science and technology fields. Given the paucity of studies and inconsistent findings, further examination of the relationship between motivation and academic achievement in community college students is needed.

Extrinsic academic motivation has been the focus of many recent studies; variations of this motivation are referred to as labor-market orientation, academic capitalism, consumerism or consumerist values, and instrumental orientation or degree purchasing orientation (Brotheridge & Lee, 2005; Fairchild & Crage, 2014; Gretsky & Lerner, 2020; Laverghetta, 2018; Nelson & Sandberg, 2017; Quinlan, 2021; Simons et al., 2004). The commonality among all these types of instrumental/extrinsic motivations is a focus on attending classes in order to obtain a career rather than to learn the course material. Consumeristic motivation has been associated with less elaborative processing, poor study habits, and negatively related to grades (Brotheridge & Lee, 2005). One study, which examined consumeristic motivation in community college students in Hong Kong, found these students to possess high levels of instrumental motivation which was related to poor study skills (Wong, 2022). This orientation is included in the model and is referred to as consumeristic motivation. This type of motivation may be particularly relevant in a community college sample as many students attend these colleges.
for financial reasons (Dadgar, 2012; National Center for Public Policy & Higher Education, 2011).

**Learning Strategies**

Students’ academic motivation is related to the quality of their study skills and types of learning strategies that they use to learn (Boyle et al., 2003; Donche et al., 2013; Lashbrook, 2010; Simons et al., 2004; Vermetten et al., 2001). Biggs (1987) suggested that surface strategies involve less effective processes, such as memorization or minimal processing of the information, whereas deep strategies involve elaborate processing and active pursuit of knowledge beyond the information presented. These deep learning strategies have been found to be related to intrinsic motivation (Boyle et al., 2003; Donche et al., 2013; Prat-Sala & Redford, 2010; Vansteensel et al., 2004). On the other hand, the less effective, surface processing has been found to be related to consumeristic motivation and amotivation (Brotheridge & Lee, 2005; Bunce & Bennett, 2019; Donche et al., 2013; Vanthournout et al., 2012; Wong, 2022). These studies suggested that different types of motivations are related to different quality learning strategies. Students with intrinsic motivation appear to use deeper, more effective, learning strategies for high quality learning, while students with amotivation or consumeristic motives appear to use surface, or poor quality study processes. These cognitive processes appeared to be the link between the motivational aspects of the model and academic achievement.

The learning strategies that students use are ultimately related to their grades (Ahmed & Bruinsma, 2006; Chen et al., 2015; McInerney et al., 2012; Valle et al., 2003; Wu et al., 2021; Zhang et al., 2022). Studies have shown that students who use deep learning strategies tended to have better academic performance than those using surface strategies (Chen et al., 2015; Valle et al., 2003). McInerney and colleagues (2012) found that academic self-concept, learning strategies, and academic achievement had reciprocal relationships with each other in a sample of secondary students in Hong Kong. The literature consistently found support for a relationship between learning strategies and academic achievement in university students, but this relationship has not been examined in community college students. Given that community college students tended to be less prepared for college than their university peers, it is critical to extend the examination of these factors to this special group of college students (Bailey et al., 2015; National Center for Education Statistics [NCES], 2016).

**Community College Student Characteristics**

Most of the research on the factors that predict motivation, learning strategies, and academic success discussed above is based on traditional university students. Community college students have different characteristics than students who attend four-year institutions. They tend to be older, less prepared for college, have children, and work either full-time or part-time while in college (Bailey et al., 2015; NCES, 2016). These differences could limit the generalizability of previous studies and learning models to this subpopulation of college students.

Since community college students tend to be older than their university counterparts, age was an important variable to include in the proposed model. Several studies found that age was related to motivation and learning strategies (Brotheridge & Lee, 2005; Nelson & Sandberg, 2017; Shillingford & Karlin, 2013; Warden & Myers, 2017; Zhang et al., 2022). Brotheridge and Lee (2005) found that older students were less likely to engage in consumeristic behaviors of academic achievement. In addition, older students embraced a deeper approach to studying, such as testing themselves on important topics, as opposed to their younger peers who used more surface methods, such as only studying course outlines.

Although there do not tend to be gender differences between community college and university students, several constructs included in the model have been related to gender in the literature. Some studies have found that gender is related to motivation (Ajouni et al., 2022; Brotheridge & Lee, 2005; Brouse et al., 2010; Vallerand & Bissonnette, 1992). Research has shown that men are more likely than women to view their education as a tool for future success, as opposed to, learning for learning’s sake, and that this focus is related to inferior academic performance (Brotheridge & Lee, 2005). Due to the fact that these studies found some gender differences in learning, gender was included as a student characteristic in the present model.

Academic self-concept, one’s affective and cognitive evaluation of their academic capabilities, has also been shown to be related to academic achievement (Ahmed & Bruinsma, 2006; Chen et al., 2015; McInerney et al., 2012; Valle et al., 2003; Wu et al., 2021; Zhang et al., 2022). Several studies have also found that academic self-concept is related to intrinsic motivation which was included in the model (Ahmed & Bruinsma, 2006; Arens et al., 2019). Students who did not perform well academically in high school might not have had high levels of confidence in their academic abilities; community colleges might have been their only option for obtaining a college degree (Bailey et al., 2015). Therefore, it is critical to examine how academic self-concept relates to motivation and learning strategies.
The Present Study
There has been a considerable amount of research on academic motivation and learning strategies, but most of the research has focused on university students (e.g., Algharaibeh, 2020; Brotheridge & Lee, 2005; Erdogdu, 2019). The applicability of these models in community college students who have different characteristics than their university student counterparts, has not been examined. These students tend to be older, more likely to be employed, and less prepared for college (Bailey et al., 2015; NCES, 2016; U.S. Census, 2023). It is important to determine whether these models predict learning behaviors in this population. Studying community college students fills a gap in current research and contributes to a more inclusive and informed understanding of motivation in higher education.

The purpose of the present study was to understand how student characteristics impact motivation and to examine the affective, motivational, and cognitive aspects of the learning process in community college students. Our model integrates several learning models and includes the addition of consumeristic motivation (Ahmed & Bruisma, 2006; Valle et al., 2003; Weber et al., 2011; see Figure 1). The predictions based on this model were that:

**H1.** Student characteristics of age, gender, and academic self-concept would predict three types of motivation: (a) intrinsic, (b) consumeristic, and (c) amotivation.

**H2.** Intrinsic motivation would predict (a) deeper learning strategies when student characteristics and other types of motivation are held constant, (b) whereas amotivation and consumeristic motivation would predict surface learning strategies.

**H3.** Deep learning strategies would positively predict academic success.

### TABLE 1
**Descriptive Statistics and Correlations for Study Variables**

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>M</th>
<th>SD</th>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
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<td>1. Age</td>
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<td>7.12</td>
<td>-</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2. Gender</td>
<td>130</td>
<td>0.78</td>
<td>0.41</td>
<td>.16</td>
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<td>-</td>
<td>-</td>
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<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>3. Academic self-concept</td>
<td>130</td>
<td>55.12</td>
<td>7.84</td>
<td>.55</td>
<td>.05</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>4. Intrinsic motivation</td>
<td>129</td>
<td>29.72</td>
<td>8.11</td>
<td>.32</td>
<td>.07</td>
<td>.36</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5. Academic motivation</td>
<td>130</td>
<td>5.35</td>
<td>3.56</td>
<td>-.10</td>
<td>.01</td>
<td>-.55</td>
<td>-.29</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>6. Consumer motivation</td>
<td>130</td>
<td>23.91</td>
<td>4.04</td>
<td>.02</td>
<td>-.09</td>
<td>-.05</td>
<td>.26</td>
<td>.02</td>
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<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7. Deep strategies</td>
<td>129</td>
<td>9.81</td>
<td>2.72</td>
<td>.41</td>
<td>.06</td>
<td>.26</td>
<td>.56</td>
<td>-.06</td>
<td>.18</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>8. Surface strategies</td>
<td>131</td>
<td>10.68</td>
<td>2.47</td>
<td>-.18</td>
<td>.09</td>
<td>-.21</td>
<td>.11</td>
<td>.23</td>
<td>.24</td>
<td>.06</td>
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</tr>
<tr>
<td>9. Grades</td>
<td>117</td>
<td>3.30</td>
<td>0.59</td>
<td>.05</td>
<td>.00</td>
<td>.23</td>
<td>.03</td>
<td>-.22</td>
<td>-.04</td>
<td>.03</td>
<td>-.10</td>
</tr>
</tbody>
</table>

Note: '0 = men and 1 = women. *p < .05. **p < .01. ***p < .001.

### Procedure
The present study was approved by the Northern Virginia Community College institutional review board (IRB) and was conducted in accordance with all ethical guidelines. Information regarding demographics, learning strategies, and motivation was collected in an online survey between March 31, 2022, and May 3, 2022. Limitations on the total number of questions in the survey were set by the IRB. As such, the most reliable questions in each of the three measurement scales: academic self-concept, academic motivation, and learning strategies were used in this study (Biggs et al., 2001; Reynolds et al., 1980; Vallerand et al., 1992).

Recruitment announcements were made in classes and through Canvas. Students were offered extra credit to participate in the online survey outside of class time.

### Demographics
One hundred thirty-one students from seven psychology classes participated in the study. Participants predominantly identified as women (78% women and 21% men). They ranged in age from 18 to 50 years (M = 23.37, SD = 7.1). The students identified themselves as Hispanic (32.1%), White (21.4%), Black (16%), Asian (16%), mixed ethnicity (6.9%), and Middle Eastern (5.3%). Three participants did not provide ethnic information.

### Measures
**Academic Self-Concept**
Participants were asked to answer 11 questions that represented the highest loading factors in each of the five subscales of the Academic Self-Concept Scale according to the original validation study (Reynolds et al., 1980). Items were on a five-point Likert scale that ranged from 1 (strongly disagree) to 5 (strongly agree). The scale assessed five components of academic self-concept including: self-confidence, doubt, grade and effort, habits, and external locus of control. Six questions had to be reversed scored; a high score indicated higher levels of academic self-concept. Items selected for the present study can be accessed at https://osf.io/s5b8n. Reynolds et al. (1980) reported a high reliability based on their 40-item scale (α = .91). In the present study, reliability was α = .84 for the 11 items selected from the original scale.

**Academic Motivation Scale**
Participants answered questions from the Academic Motivation Scale (Vallerand et al., 1992). The modified version of the scale included six intrinsic motivation items, six extrinsic motivation items (four of the extrinsic items were coded as consumeristic motivation items), and two items assessed amotivation. The items from our...
modified version can be accessed at https://osf.io/s5b8n. Participants were instructed to rate the items based upon the extent to which the items corresponded to the reason why they attended college from 1 (does not correspond at all) to 7 (corresponds exactly); e.g., "In order to obtain a more prestigious job later on"). Three participants did not complete all questions, so they were not included in the specific analyses of these variables. Vallerand et al. (1992) reported the reliability of both the intrinsic and amotivation subscales, as α = .85. The reliability of the extrinsic subscales ranged from α = .62 and α = .83. The present study found reliability coefficients of α = .88 for the intrinsic items, α = .80 for the amotivation items, and α = .67 for the new consumeristic subscale.

Learning Strategies
Participants completed six questions from the Study Process Questionnaire (Biggs et al., 2001). We selected items from the original scale that pertained to learning strategies, we did not include items related to motives. Three items assessed deep learning strategies, and three assessed surface learning strategies. Each learning strategy was measured by totaling the three relevant questions in the respective subscales. The list of the items selected for the current measure can be accessed at https://osf.io/s5b8n. Two participants did not complete all items and were not used in the analyses relating to learning strategies. Biggs et al. (2001) reported reliability coefficients of α = .64 for surface learning strategies and α = .73 for deep learning strategies. The present study found similar reliability coefficients of α = .60 for surface learning strategies and α = .70 for deep learning strategy items.

Analysis
Descriptive statistics were calculated for all predictors and outcome variables. Pearson's correlation analyses were run for all predictor and outcome variables. These statistics are included in Table 1. We handled missing data by dropping individuals with missing responses from the analyses of those particular measures. Table 1 also contains the number of participants who had complete responses for each variable. Prior to running multiple regression analyses, tests for assumptions of normality, linearity, independence, homoscedasticity, multicollinearity, and outliers were satisfied. Multiple regression analyses were used to predict each of the three types of motivation, the two types of learning strategies, and grade point average (GPA). All analyses were conducted using IBM SPSS 28.0.1.0.

Results
A prediction of the present study was that student characteristics of age, gender, and academic self-concept would be related to the different types of motivation (H1). Three separate multiple regression analyses were run to predict each motivation subscale from gender, age, and academic self-concept. All assumptions for the use of multiple regression analysis to predict all three types of motivation were met. The multiple regression model significantly predicted intrinsic motivation, F(3, 124) = 9.08, p < .001, R² = .18, ΔR² = .16. Academic self-concept (β = .30, p < .001) and age (β = .21, p = .02) were significant positive predictors of intrinsic motivation. The model significantly predicted amotivation, F(3, 124) = 19.73, p < .001, R² = .32, ΔR² = .30, with academic self-concept negatively related to amotivation (β = −.62, p < .001). None of the other predictors were significant. The regression model did not predict consumeristic motivation, F(3, 125) = 0.36, p = .78, R² = .01, ΔR² = −.02. Regression coefficients and standard errors for all three regression models which predicted motivation types can be found in Table 2.

Learning Strategies and Academic Performance
One prediction was that intrinsic motivation would be

<table>
<thead>
<tr>
<th>TABLE 2</th>
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<tbody>
<tr>
<td><strong>Multiple Regression Results for Motivation Variables</strong></td>
</tr>
<tr>
<td>Motivation</td>
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<td></td>
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<tr>
<td><strong>Intrinsic</strong></td>
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<tr>
<td>Model</td>
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<tr>
<td>Constant</td>
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<tr>
<td>Age</td>
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<tr>
<td>Gender</td>
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<tr>
<td>Academic self-concept</td>
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<tr>
<td><strong>Amotivation</strong></td>
</tr>
<tr>
<td>Model</td>
</tr>
<tr>
<td>Constant</td>
</tr>
<tr>
<td>Age</td>
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<tr>
<td>Gender</td>
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<tr>
<td>Academic self-concept</td>
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<td><strong>Consumeristic Motivation</strong></td>
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<tr>
<td>Model</td>
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<tr>
<td>Constant</td>
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<td>Age</td>
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<tr>
<td>Gender</td>
</tr>
<tr>
<td>Academic self-concept</td>
</tr>
</tbody>
</table>

Note. Mode = "Enter" method in SPSS Statistics; b = unstandardized regression coefficient; CI = confidence interval; LL = lower limit; UL = upper limit, SE b = standard error of the coefficient; β = standardized coefficient; R² = coefficient of determination; ΔR² = adjusted R². 

*p < .05; **p < .01; ***p < .001.
Predicting Motivation and Learning Strategies

The purpose of the present study was to examine the affective, motivational, and cognitive aspects of the learning process in community college students. Results of the present study supported several of the hypotheses. Some of the student characteristics predicted related to deep learning strategies beyond the student characteristics of age, gender, and academic self-concept (H2a). A multiple regression was run to predict deep learning strategies from intrinsic motivation, amotivation, and consumeristic motivation as well as gender, age, and academic self-concept. All assumptions for regression analyses predicting both learning strategies were met. The multiple regression model significantly predicted deep learning strategies, $F(6, 119) = 13.27$, $p < .001$, $R^2 = .40$, $\Delta R^2 = .37$. Of the six predictors, only age ($\beta = .23$, $p = .005$) and intrinsic motivation ($\beta = .48$, $p < .001$) were significant positive predictors of deep learning strategies.

Additionally, another prediction of the present study was that amotivation and consumeristic motivation would be positively related to surface learning strategies (H2b). The model significantly predicted surface learning strategies, $F(6, 120) = 4.12$, $p < .001$, $R^2 = .17$, $\Delta R^2 = .13$. In addition, amotivation was a positive predictor of surface learning strategies ($\beta = .23$, $p = .03$). Unexpectedly, intrinsic motivation was a positive predictor of surface learning strategies ($\beta = .25$, $p = .01$). Regression coefficients and standard errors for all deep learning and surface learning models can be found in Table 3.

The final prediction was that deep learning strategies would be positively related to GPA (H3). We included student characteristics, types of motivations, and deep learning and surface learning strategies were predictors of GPA and found that the model was not significant, $F(8, 107) = 0.88$, $p = .53$, $R^2 = .06$, $\Delta R^2 = -.01$. Regression coefficients and standard errors can be found in Table 4.

These results provided a different picture than the proposed model. See Figure 2 for a graphic of relationships among age, academic self-concept, different types of motivation, deep learning and surface learning strategies, and GPA. The results suggested that academic self-concept was a significant predictor of both intrinsic motivation and amotivation. Age and intrinsic motivation were predictors of deep learning strategies, as expected. Gender was not a significant predictor of any affective, motivational, or cognitive variables. Intrinsic and amotivation also predicted surface strategies. None of the variables predicted consumeristic motivation or academic success as measured by GPA.

### Discussion

The purpose of the present study was to examine the affective, motivational, and cognitive aspects of the learning process in community college students. Results of the present study supported several of the hypotheses. Some of the student characteristics predicted

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**TABLE 3**

<table>
<thead>
<tr>
<th>Learning Strategies</th>
<th>$b$</th>
<th>95% CI for $b$</th>
<th>SE $b$</th>
<th>$\beta$</th>
<th>$R^2$</th>
<th>$\Delta R^2$</th>
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<td><strong>Model-Deep</strong></td>
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<td></td>
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<td></td>
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</tr>
<tr>
<td>Constant</td>
<td>-.08</td>
<td>-3.61 to 3.45</td>
<td>1.78</td>
<td>.23</td>
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<td></td>
</tr>
<tr>
<td>Age</td>
<td>.09</td>
<td>.03 to 1.15</td>
<td>.03</td>
<td>.10</td>
<td>.03</td>
<td>.09</td>
</tr>
<tr>
<td>Gender</td>
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<td>-1.07 to .83</td>
<td>.48</td>
<td>-.02</td>
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<td>Academic self-concept</td>
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<td>.03 to .10</td>
<td>.03</td>
<td>.09</td>
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<td>Intrinsic motivation</td>
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<td>.48</td>
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<td>Amotivation</td>
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<td>.16</td>
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<td>Consumer motivation</td>
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<td>-.05 to .16</td>
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<td><strong>Model-Surface</strong></td>
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<td>Constant</td>
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<td>-.11 to .03</td>
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</tr>
<tr>
<td>Intrinsic motivation</td>
<td>.07</td>
<td>.02 to .13</td>
<td>.03</td>
<td>.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amotivation</td>
<td>.16</td>
<td>.02 to .29</td>
<td>.07</td>
<td>.23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consumer motivation</td>
<td>.09</td>
<td>-.02 to .20</td>
<td>.06</td>
<td>.14</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Mode = “Enter” method in SPSS Statistics; $b$ = unstandardized regression coefficient; CI = confidence interval; LL = lower limit; UL = upper limit; SE $b$ = standard error of the coefficient; $\beta$ = standardized coefficient; $R^2$ = coefficient of determination; $\Delta R^2$ = adjusted $R^2$. $p < .05$, $\beta < .01$, $\beta < .001$, $\Delta R^2 = .005$.

---

**TABLE 4**

<table>
<thead>
<tr>
<th>Grades</th>
<th>$b$</th>
<th>95% CI for $b$</th>
<th>SE $b$</th>
<th>$\beta$</th>
<th>$R^2$</th>
<th>$\Delta R^2$</th>
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</thead>
<tbody>
<tr>
<td><strong>Model</strong></td>
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<tr>
<td>Constant</td>
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<td>2.07 to 4.24</td>
<td>.55</td>
<td>.14</td>
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<tr>
<td>Age</td>
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<td>-.02 to .02</td>
<td>.01</td>
<td>.01</td>
<td>.01</td>
<td>.15</td>
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<tr>
<td>Gender</td>
<td>.02</td>
<td>-.25 to .30</td>
<td>.14</td>
<td>-.02</td>
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<td>Academic self-concept</td>
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<td>-.01 to .03</td>
<td>.01</td>
<td>.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intrinsic motivation</td>
<td>-.01</td>
<td>-.03 to .01</td>
<td>.01</td>
<td>-.09</td>
<td></td>
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<tr>
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<td>-.06 to .02</td>
<td>.02</td>
<td>-.15</td>
<td></td>
<td></td>
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<tr>
<td>Consumer motivation</td>
<td>.00</td>
<td>-.03 to .03</td>
<td>.02</td>
<td>.02</td>
<td></td>
<td></td>
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<tr>
<td>Deep strategies</td>
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<td>-.04 to .06</td>
<td>.03</td>
<td>.04</td>
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<td></td>
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<tr>
<td>Surface strategies</td>
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<td>-.06 to .04</td>
<td>.03</td>
<td>-.03</td>
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<td></td>
</tr>
</tbody>
</table>
the motivational aspects of learning. As predicted (H1a), age and academic self-concept were positively related to intrinsic motivation. This is consistent with previous studies which examined these constructs in a university institution (Shillingford & Karlin, 2013; Warden & Myers, 2017). Academic self-concept also showed a strong positive relationship with intrinsic motivation, which supports the results from other studies of university students and was negatively related to amotivation as we predicted (H1c; Ahmed & Bruinsma, 2006; Arens et al., 2019). Finding similar results in our community college sample extends the external validity of these claims to include nontraditional students who are more prevalent in community colleges.

None of the variables included in our model predicted consumeristic motivation (H1b), nor was this type of motivation related to either of the learning strategies. Although some studies found age differences in consumeristic motivation, the results do not support these findings (Brotheridge & Lee, 2005; Nelson & Sandberg, 2017). Consumeristic motivation was not related to any other variables of interest in the study. This may be because the measure of consumeristic motivation was not sensitive to differences in this construct within this sample. Another possible explanation may be that consumeristic motivation is not relevant to this group of community college students who were predominantly psychology and prenursing majors. Alternatively, the assessment of consumeristic motivation, which consisted of four questions from an existing scale might have contributed to the lack of correlation. A possible explanation might be that nontraditional students have a better understanding of their academic abilities, therefore, using deep learning strategies due to higher intrinsic motivation. Future studies should test this model with other community college students to support its reliability and validity. Differences in student demographics across geographical locations may result in different levels within the constructs.

Gender was not related to any of the variables in the model, contrary to expectation based on previous studies. Several studies found that female students were more intrinsically motivated, and therefore, less externally regulated than male students (Ajlouni et al., 2022; Brouse et al., 2010; Vallerand & Bissonnette, 1992). It may be that there are fewer gender differences in community college samples, or these null findings might be due to lack of variability in this disproportionately female sample.

The relationship between the different types of motivations and learning strategies was partially supportive of our predictions and consistent with earlier studies. When age was controlled, intrinsic motivation had a strong positive relationship with deep learning strategies (H2a), which was consistent with previous studies (Fryer et al., 2014; Vansteenkiste et al., 2006). Contrary to our expectations (H2b), both intrinsic and amotivation were positively predictive of surface learning strategies, although these relationships were small. In previous studies, extrinsic motivation and consumeristic motivation were related to surface learning strategies (Donche et al., 2013; Vanthournout et al., 2012). It is possible that community college students, who tend to be less prepared for college, use any types of strategies that they can to learn the required material. Community college students, who often have additional obligations such as maintaining part-time or full-time employment and taking care of their families, may have to alter the strategies for learning new material due to time constraints. Deep strategies are more time-consuming, and many community college students may not have the time.
to utilize them. This result merits further investigation.

Although many studies have found that deep learning strategies and intrinsic motivation are predictive of better performance in academic settings (Algharaibeh, 2020; Clarke et al., 2014; Fryer et al., 2014; Lizzio et al., 2002), this was not the case in the present study. The lack of predictability of GPA in our results may be due to the nature of our sample. The community college student population often includes older students who are returning to college or delayed entrance into a postsecondary institution (Clovis & Chang, 2019). Nelson & Sandberg (2017) found that adults over the age of 25 years old were less predictable when measuring strategy and motivation. The lack of academic preparation in some community college students is a confounding variable that affects all aspects of the learning process, which may influence results based on location.

Other variables related to course format and instructor behaviors should also be taken into consideration in future models as these factors may impact students’ motivation and learning strategies (Weber et al., 2011). Initially, we planned to include classroom variables, such as program of study, whether the course was required or an elective, course type, teaching modality, and teaching behaviors. However, due to confounds, we decided to remove them to focus on a model that concentrated solely on student characteristics.

Several other limitations of the current study reduce the generalizability of these results. Community colleges serve local communities, so this study may not generalize to all community college students (Franklin, 2013). Future research could replicate this model with other samples in a variety of geographical locations to examine if consumeristic motivation impacts learning strategies and academic success among other community college students. Secondly, the fact that the IRB limited the sample to only courses taught by one professor also reduced the generalizability of the results. A longitudinal examination of community college students to determine if their study habits and motivation fluctuate would be informative (Bunce & Bennett, 2019). Additionally, the sample consisted of predominantly female psychology and nursing students from a single professor’s classes. Students in psychology and medical fields might be intrinsically motivated, whereas, other majors such as engineering might be more consumeristically motivated. To enhance the applicability of findings, future researchers should explore these constructs using a more diverse sample encompassing various disciplines and demographics.

Another factor that might have contributed to our results was the COVID-19 pandemic. It impacted society in many ways including the importance of a postsecondary education. Older students might have returned to educational institutions to continue their degrees or to pursue a different program of study. This shift could have resulted in individuals who had more intrinsic motivation returning to college as opposed to individuals who never enrolled in higher education or did not complete their initial attempt at a degree. Conversely, students might have been struggling from COVID fatigue and felt less motivated than they would have otherwise. The fact that 17% of these students indicated that they were not sure why they were still attending college suggests this is a possibility. Future studies that examine the relationship between motivational factors and retention would be very useful because community colleges are often criticized for their completion and transfer rates (Bailey et al., 2015).

The present study added to the understanding of the importance of academic motivation and learning strategies in community college students. The variables that were the most predictive of deep learning strategies, in the present study, were intrinsic motivation and academic self-concept. Although they did not predict academic success, when assessed by GPA, research suggested that these higher quality study strategies form the foundation for academic success that could be potentially enhanced by educators in the classroom (Algharaibeh, 2020; Clarke et al., 2014; Fryer et al., 2014; Lizzio et al., 2002). In addition to examining affect, motivation, and cognitive factors, future studies should include more demographic variables that differentiate community college students from university students (e.g., preparation for college, work status, family responsibility) to provide a complete model of factors that could affect this unique population of students. Examining these learning models for community college students in more detail could help educators focus on the concepts that are most relevant to good study skills and academic success.

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Hawthorn, C., Beatty, Rubin, and Kaiser | Predicting Motivation and Learning Strategies

Livesey, Beatty, Rubin, and Kaiser | Predicting Motivation and Learning Strategies

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This study was preregistered at https://osf.io/4k7uy/. Materials and data for this study can be accessed at https://osf.io/s5b8n. We have no known conflicts of interest. Special thanks to Kara E. Hokes for insightful comments during the editing process.

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