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Sustainable Retention Strategies in Aviation Education: Coaching Leadership, Instructor Behavior, and Career Decidedness

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Attrition in collegiate aviation training remains high, with only about 20 percent of students completing flight programs. This study investigates how flight instructor leadership behaviors influence student persistence in aviation education. Grounded in Tinto's Model of Institutional Departure and Attribution Theory, the research examines how Coaching Leadership Style (CLS) and Attribution of Instructor Behavior (AoIB) affect Career Decidedness (CD) and Intention to Persist (ITP). Survey data from 223 students at five University Aviation Association programs were analyzed using structural equation modeling (SEM). CLS significantly predicted CD, which in turn predicted ITP, while AoIB directly predicted ITP. Post hoc analyses revealed that CLS statistically suppressed AoIB, indicating that students often interpret coaching behaviors as altruistic. These findings highlight the importance of instructor leadership training and introduce the SEGAS framework—Set expectations, Encourage perspectives, Give feedback, Ask for feedback, and Supply resources—as a practical tool to strengthen student persistence in flight education.

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Introduction

Attrition in collegiate flight training continues to threaten the aviation workforce pipeline. Only about two in ten students complete flight training (Beckett, 2016), creating a persistent gap between pilot supply and demand. For institutions that invest heavily in-flight education infrastructure, each student lost represents a significant financial and operational cost. More importantly, high attrition delays the production of qualified pilots during a time when the aviation industry continues to face workforce shortages and mounting operational demands.

Although cost, time, and training difficulty are frequently cited reasons for withdrawal, these explanations alone do not account for why some students persist while others leave. Prior research has emphasized academic performance, financial factors, and program structure, but has paid little attention to the relational dynamics that occur between instructors and students. The instructor–student relationship in flight training represents a unique blend of teaching, evaluation, and mentorship. This dynamic parallels the employee–supervisor relationship in organizations, where leadership behaviors strongly influence job satisfaction and retention (Bean, 1982; Bers & Smith, 1991).

This study examines whether leadership behaviors demonstrated by flight instructors influence students' intention to persist in aviation education. Specifically, it explores how Coaching Leadership Style (CLS) and Attribution of Instructor Behavior (AoIB)—students' perceptions of an instructor's motives—affect Career Decidedness (CD) and Intention to Persist (ITP). The research seeks to identify leadership behaviors that strengthen student commitment and inform instructor-training strategies designed to improve retention outcomes in collegiate aviation programs. Guided by these issues, the study addressed three primary research questions:

- How does Coaching Leadership Style (CLS) affect student persistence in collegiate aviation programs?
- How does Attribution of Instructor Behavior (AoIB) influence persistence?
- Does Career Decidedness (CD) mediate the relationships among CLS, AoIB, and Intention to Persist (ITP)?

These questions frame the investigation of instructor leadership behaviors as a factor in student retention and provide the foundation for testing the proposed structural model.

Theoretical Framework

Understanding why students persist in collegiate aviation training requires connecting educational theory with leadership and motivational behavior. Persistence is not solely a product of academic ability or resources; it reflects how students experience their environment and relationships within it. Two established theories—Tinto's Model of Institutional Departure and Attribution Theory—provide a foundation for examining how instructor behaviors influence student commitment and persistence. When combined with the concept of Coaching Leadership

Style (CLS), these frameworks offer an integrated perspective on how leadership behaviors translate into motivational and retention outcomes in aviation education.

Tinto's (1975) Model of Institutional Departure explains persistence through academic and social integration. For flight students, the instructor–student relationship is a central element of social integration (Pascarella & Terenzini, 1980). Attribution Theory (Heider, 1958; Kelley & Michela, 1980) explains how students interpret instructor motives—as altruistic or self-serving—and how those perceptions influence engagement.

Coaching Leadership Style aligns with both frameworks. Coaching leaders emphasize feedback, development, and individualized support (Ellinger et al., 2011; Berg & Karlsen, 2016). When instructors use coaching behaviors, students may attribute altruistic motives (Barbuto & Wheeler, 2006), strengthening their commitment to training.

Methodology

To examine how instructor leadership behaviors influence student persistence, this study employed a quantitative design grounded in structural equation modeling (SEM). The approach allowed for simultaneous testing of multiple relationships among key constructs—Coaching Leadership Style (CLS), Attribution of Instructor Behavior (AoIB), Career Decidedness (CD), and Intention to Persist (ITP)—and for evaluating mediation effects that reflect the complex psychological and behavioral factors influencing persistence in aviation education.

Design and Sample

A quantitative, non-experimental SEM design examined relationships among CLS, AoIB, CD, and ITP. Participants were 223 flight students (ages 18–25) enrolled at five UAA institutions, Angelo State University, Delta State University, Southeast Missouri State, Purdue University, and University of North Dakota between October 2023 and March 2024.

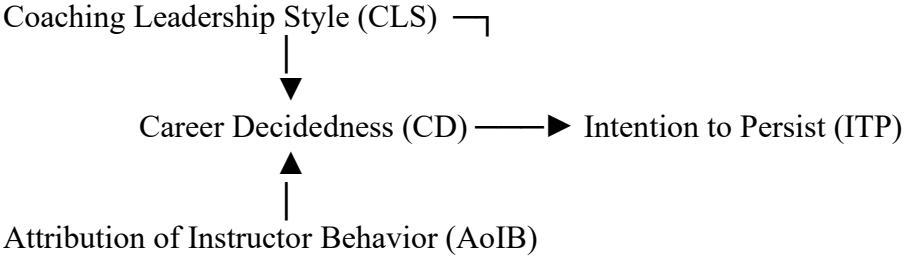
Instruments

Four validated scales were administered with their original response formats: CLS was measured with five items on a seven-point Likert scale (1 = strongly disagree to 7 = strongly agree); AoIB was measured with four items on a four-point Likert scale (1 = strongly disagree to 4 = strongly agree); CD was measured with six items on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree); and ITP was measured with six items on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). Internal consistency (Cronbach's α) in the present sample was $\alpha = .88$ (CLS), $\alpha = .86$ (AoIB), $\alpha = .68$ (CD), and $\alpha = .65$ (ITP).

Analysis

Structural equation modeling (AMOS 29) indicated good model fit (CFI = .968; RMSEA = .049). Bootstrapped CIs confirmed all significant paths. Figure 1 illustrates the hypothesized model tested in this study.

Figure 1.
Conceptual model of relationships among study variables (CLS and AoIB → CD → ITP).



Results

After removing incomplete or invalid responses, 223 valid survey cases were retained for analysis. Confirmatory factor analysis (CFA) supported a four-factor structure (CLS, AoIB, CD, ITP) with acceptable fit indices ($\chi^2(84)=128.9$, CFI=.97, RMSEA=.049, SRMR=.054). Structural model fit was good (χ^2 (85) =129.7, CFI=.97, RMSEA=.049, SRMR=.054). CLS significantly predicted CD (b=.27, p=.02); AoIB→CD was nonsignificant (b=-.23, p=.33). CD predicted ITP (b=.11, p=.04). AoIB directly predicted ITP (b=.28, p<.001). Career Decidedness mediated the CLS→ITP path (indirect b=.03, p=.04) but not AoIB→ITP (b=-.02, p=.17).

Post Hoc Analysis

The high correlation between Coaching Leadership Style (CLS) and Attribution of Instructor Behavior (AoIB) ($r = .71$, $p < .001$) suggested potential multicollinearity within the overall structural model. Examination of standardized loadings indicated that CLS may have acted as a suppressor variable, reducing the explanatory power of AoIB in predicting Career Decidedness (CD) and Intention to Persist (ITP). Suppression occurs when one variable accounts for variance shared with another predictor but unrelated to the outcome, which can lead to an underestimation of the suppressed variable's true effect (Oh, 2023).

To clarify these effects, two additional SEM models were tested. Model 5 (M5) included CLS as the sole independent variable, while Model 6 (M6) included only AoIB. In M5, CLS demonstrated significant direct effects on both CD ($b = .18$, $SE = .06$, $p < .001$) and ITP ($b = .11$, $SE = .04$, $p = .002$), but the indirect effect of CLS on ITP through CD was not significant ($b = .012$, $SE = .015$, $p = .12$). In M6, AoIB exhibited significant direct effects on CD ($b = .27$, $SE = .13$, $p = .02$) and on ITP ($b = .27$, $SE = .09$, $p = .002$), as well as a significant indirect effect of AoIB on ITP mediated by CD ($b = .027$, $SE = .023$, $p = .025$).

Together, these findings indicate that CLS and AoIB are distinct but highly related constructs. Their overlap in the full model concealed each variable's independent contribution: CLS suppressed AoIB, resulting in an underestimation of AoIB's effect on CD and, subsequently, on ITP. When analyzed separately, both variables significantly influenced students' intention to persist, with CD mediating the indirect relationship between AoIB and

persistence. These results reinforce that students interpret coaching leadership behaviors as altruistic instructor intent and that both constructs are essential components of effective retention strategies in aviation education.

Discussion

The findings confirm that instructor leadership behaviors play a meaningful role in student persistence within collegiate aviation training. When instructors demonstrate a coaching leadership style, students interpret those behaviors as authentic concern for their success, which increases career decidedness and, in turn, their intention to persist. This relationship reinforces Tinto's (1975) assertion that persistence is influenced by both academic and social integration and supports earlier leadership–motivation research indicating that developmental feedback and support strengthen individual commitment (Restubog et al., 2010). The significant direct effect of Attribution of Instructor Behavior (AoIB) on persistence suggests that perceived altruism alone can motivate students to continue training, while the indirect effect of Coaching Leadership Style (CLS) through career decidedness highlights the developmental pathway by which leadership behaviors foster long-term commitment to aviation education.

Practical Implications

The study's findings point to clear, actionable steps for improving student retention in flight training. Because coaching leadership behaviors are interpreted by students as genuine altruism, instructor-development programs can intentionally cultivate these behaviors to strengthen persistence and career commitment. To translate the results into practice, this study proposes the SEGAS framework, which operationalizes coaching behaviors for use in instructor training:

S – Set expectations. Clearly define performance goals, responsibilities, and standards so students understand what success looks like in both the cockpit and the classroom.
E – Encourage broader perspectives. Help students see challenges as opportunities for growth by connecting flight-training experiences to larger professional and personal goals.
G – Give constructive feedback. Provide timely, specific, and actionable feedback that reinforces progress and guides improvement without discouragement.
A – Ask for feedback. Invite students to share their perceptions of instruction and learning, promoting open communication and mutual accountability.
S – Supply resources. Ensure students have access to the materials, mentoring, and institutional support they need to meet training and academic requirements.

When instructors apply the SEGAS framework when interacting with their students, the students interpret those behaviors as altruistic support, leading to stronger persistence. Integrating SEGAS into instructor-development programs can improve retention not only in aviation but in other high-attrition disciplines such as healthcare and technology.

Conclusion

Persistence in aviation education depends not only on cost or curriculum but on leadership within the instructor–student relationship. Coaching Leadership Style—perceived as altruistic instructor behavior—strengthens Career Decidedness and, ultimately, Intention to Persist. Implementing SEGAS as a leadership framework offers a sustainable strategy for reducing attrition and supporting the next generation of professional pilots.

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