Introduction. Airline service major students have experienced very high online practical class-related stress during the COVID-19 pandemic, because students in online classes have not had the ability to practice service skills and customer service techniques that would previously have been learned in face-to-face classes (e.g., service role-playing, food and beverage role-playing, etc.). Thus, online practical class-related stress has led to high college life maladjustment and dropout intention among students. Therefore, the purpose of this study was to identify the relationships among online practical class-related stress, college life maladjustment, and dropout intention, and to examine the effect of resilience as a moderated mediation that weakens the negative impact between college life maladjustment and dropout intention.

Samples and methods. The participants in this study were 314 airline service major students from three universities in South Korea. Data were collected from sophomore (40.1%), junior (30.9%), and senior (29%) students in South Korea. This study used SPSS Win.21.0 statistics programs to conduct the frequency test, exploratory analysis, and reliability and correlation tests. For the moderated mediation analysis, ‘Model 14 of PROCESS macro ver.4.0’ was used as the statistical method.

Results. First, dropout intention had positive correlations with both online practical class-related stress (r = .518, p<.01) and college life maladjustment (r = .325, p<.01), while it had a negative correlation with resilience (r = -.494, p < .01). Second, resilience was found to have conditional indirect effects on the relationship between online practical class-related stress and dropout intention through college life maladjustment that were significant (p < .01) when the resilience values were 4.0 (.0379~.1200) and 4.5 (.0244~.0740), respectively. Therefore, the moderated mediation effect of resilience was verified.

Practical significance. This study found that airline service major students with high resilience have decreased dropout intention. The results of this study indicate that students’ resilience should be fostered and reinforced with the goal of reducing or overcoming students’ college life maladjustment and dropout intention during the COVID-19 pandemic.

Keywords: online practical class-related stress, college life maladjustment, resilience, school dropout intention, airline major student, COVID-19

For Reference:
Introduction

The education system has undergone dramatic changes since the outbreak of the COVID-19 pandemic in 2020, when colleges worldwide began to prioritize online classes to avoid spreading the disease [1]; specifically colleges have shifted from face-to-face classes to non-face-to-face online classes. Studies [2; 3] have found that about 96% of college students complained about problems with online classes compared to their classes before COVID-19. Students have experienced significantly increased stress as a result of not being prepared for the unexpected learning process with online classes [4; 5].

Practical service role playing classes allow students majoring in airline service to understand the essential customer service skills and attitudes needed to become a professional flight attendant. Having a positive psychological mindset toward flight attendants felt through face-to-face practical classes also has an important effect on learning commitment and continuing one’s college life [4]. In other words, among airline service major students, negative psychological states such as depression or stress can be major factors affecting their dropout intention [6].

Multiple studies in the higher education field have demonstrated a negative relationship between stress and dropout intention among college students[7; 8]. In this context, the variable of interest in the relationship between online practical class-related stress and dropout intention is college life maladjustment, wherein students do not systematically use their available resources to overcome academic, social, and psychological challenges and face difficulty in coping with the various problems and demands they encounter in college environments [9]. This often leads to negative outcomes (e.g., taking time off from school, leaving school temporarily, transferring to another school, giving up studies, etc.) [10].

Relevant studies have shown that COVID-19-related stress negatively affects college life adjustment [11; 12], and that college life maladjustment directly increases dropout intention [10]. It is therefore inferred that college life maladjustment mediates the effect between online practical class-related stress and dropout intention. The interests of the three variables listed above have increased due to COVID-19, and the relationship between college life maladjustment and dropout intention could be weakened by positive psychological variables such as resilience [13]. Resilience is the ability to overcome adversity [14]. Studies in the student-related research domain have shown that resilience caused students’ negative mental state and behavioral intention to be positive during the COVID-19 pandemic [14; 15]. Therefore, this study set resilience as a moderated mediation variable, as research has verified that students with high resilience tend to cope with difficult situations more effectively.

The purpose of this study is to identify the moderated mediation effect of resilience in the impact of online practical class-related stress on dropout intention through college life maladjustment. Given the results of the studies referenced above, this study will provide a model that uses resilience to reduce airline service major students’ intention to dropout. To achieve this study purpose, the following research questions are established:

First, what are the correlations between online practical class-related stress, college life maladjustment, dropout intention, and resilience?

Second, does college life maladjustment mediate the link between online practical class-related stress and dropout intention?
Third, does resilience moderate the relationship between college life maladjustment and dropout intention?

Fourth, does resilience moderate the mediating effect of college life maladjustment on the relationship between online practical class-related stress and dropout intention?

Theoretical Background

1. Relationship between online practical class-related stress and dropout intention

Student dropout at college or university includes a wide range of intentions, including taking time off from school, leaving school temporarily, transferring to another school, or giving up on one’s studies (majors) without completing the curriculum of the enrolled major or school [16]. Dropout can occur for a variety of reasons, such as disease, family hardship, employment conflicts, financial difficulties, mismatches between a student’s aptitude and major, etc. Factors influencing intention to dropout can be classified into an individual factor, a family factor, and school factors [17]. Out of those factors, the school factors are as follows: lack of motivation in learning, lack of interest in learning, and academic stress [18], which result in psychological issues.

Recently, Perceived mental health issues [19] such as stress [20], depression, or anxiety [21] have come to be studied as one of the main causes of dropout intention. These works have shown that undergraduates with higher burnout symptoms in school were more likely to drop out. Rump et al. [22] also verified that students with low intrinsic motivation tended to drop out more. Yun and Kim [7] studied the dropout intention of students majoring in tax & accounting, and found that higher academic stress is associated with higher dropout intention. Seo and Lee [23] also verified the positive effect of academic stress on dropout intention. Kim and Park [8] argued that students’ academic stress requires an active solution strategy because it negatively affects their college life satisfaction and can easily lead to dropout.

The COVID-19 pandemic has also been an environmental factor affecting students’ intention to dropout. With the COVID-19 outbreak, in the transition to online learning environments, students have had to face many challenges (i.e., difficulties not being able to practice in class, assignment-oriented overwork instead of practical classes, lack of feedback, social isolation, etc.). Those challenges and difficulties in online classes have resulted in students’ worries, concerns, depression, and stress [24]. In particular, students majoring in practical studies such as airline service, medical, cooking, and so on have had little opportunity to learn knowledge and skills through practical experience due to the COVID-19 pandemic, and they have faced increasing stress in online practical classes [25].

2. The mediating effect of college life maladjustment

Some students accommodate quickly to this environment, while others struggle to adjust [26]. College life maladjustment refers to a state in which students cannot adequately cope with the demands and autonomously manage their college life. In the higher education research domain, college life maladjustment has been used not only as an outcome variable of students’ stress, but also as a predictor variable of students’ intention to dropout.

The key indicator for college life adjustment is academic well-being [27], and one of the relevant variable prejudicing academic wellbeing is academic or class-related stress [28]. Many studies [11; 28] have shown that academic or class-related stress and adaptation to
college life had a significant negative correlation, and that high academic or class-related stress decreased college life adjustment. Hong [12] also identified that nursing major students’ stress increased during the COVID-19 pandemic, which led to maladjustment among nursing major students.

In the link between undergraduate students’ learning flow (concentration) and dropout intention, college life adjustment mediated the influence of learning flow on dropout intention [29]. In other words, the more students focus on their classes, the more they adjust to college life, while the less students concentrate on their classes, the less they adjust to college life. As students’ understanding of classes decreases during school life, students become maladapted to school life, which can eventually become a decisive factor for school dropout.

Choi et al. [19] argued that nursing major students, who take relatively many practical classes, adjust to college life when they have a sense of efficacy in their classes, and as a result, their intention to drop out is reduced. Shim and Kim [30] also studied how college life adjustment mediated the link between the qualities of online classes and dropout intention during the COVID-19 pandemic, and found that the contents and environments of online classes determined students’ college life adjustment, which weakened their intention to dropout. Given the results of these previous studies, it can be predicted that, in this study, online practical class-related stress may increase dropout intention through college life maladjustment in addition to the direct impact between online practical class-related stress and dropout intention.

3. Moderating effect of resilience

Recently, in an educational context, resilience is emerging as a key factor for effectively adjusting to college life [11]. The higher the resilience of students, the better they are able to reduce or overcome the negative effects of a lethargic state of mind or adverse circumstances [31; 32]. Developing resilience itself can reduce negative progress and outcomes [33].

Studies have proven that resilience moderated between-student-related variables. In a study [13] examining airline service major students’ learned helplessness during the COVID-19 pandemic, such learned helplessness was shown to decrease students’ employment preparation behavior, and resilience was found to reduce the negative impact between learned helplessness and employment preparation behavior. Bang et al. [20] found that tourism-related major students’ employment stress was negatively associated with adaptation to college life, and that resilience played a moderating role in preventing students with employment stress from not maladapting to college life. Choi et al. [34] showed that resilience moderated the negative relationship between welfare major students’ employment stress and quality of college life. The higher the employment stress of students, the lower the quality of life, and as the moderating factor, resilience alleviates the negative relationship between employment stress and quality of life. In a study investigating cyber university students’ burnout [35], students with high burnout had a low academic achievement, and that it was found that students with higher resilience undermined the negative impact of burnout decreasing academic achievement [42].

Despite the academic attention given to student resilience during the COVID-19 pandemic, there have been few studies verifying the moderating effect of resilience in the relationship between college life maladjustment and dropout intention. However, resilience can be predicted to act as a variable that reduces negative symptoms, such as the fact that airline service major students with high college life maladjustment tend to leave college,
“because resilience has been proven to be one of the representative variables that prevent negative psychological states from leading to negative behavioral outcomes [13 p. 405]. Thus, based on the literature review above, this study will verify the moderating effect of resilience between college life maladjustment and dropout intention. It will also identify whether resilience moderates the mediating effects of college life maladjustment in the link between online practical class-related stress and dropout intention.

Research method

1. Research model
   As a statistical method for the moderated mediation analysis, ‘Model 14 of PROCESS macro ver.4.0’ was used. The conceptualized research model is depicted in Figure 1.

![Conceptualized research model](image)

2. Data Collection and Samples
   The respondents among airline service major students consisted of sophomores (40.1%), juniors (30.9%) and seniors (29%) in universities of South Korea. Online survey questionnaires were used to collect data from the three universities between May 02 and May 27, 2022 in South Korea. After obtaining study consent, a total of 314 students majoring in airline service responded to this study. Following data collection, this study conducted the frequency analysis for demographic information. The ratio of female to male students was 88.2% to 11.8%, respectively, which is similar to the actual proportion of female and male flight attendants in South Korea [13]. The respondents among airline service major students consisted of sophomores (40.1%), juniors (30.9%), and seniors (29%) in South Korean universities.

3. Research tools
   3.1. Online practical class-related stress
   The questionnaires on college students’ concerns and worries about online practical classes due to the spread of COVID-19 developed by Kwon and Kim [36] and Lee and Ha [37] were used in this. The measurements were modified to be suitable for students majoring in aviation tourism by Jeon and Lee [38], who studied stress in non-face-to-face practical classes. The variable of online practical class-related stress consists of six items: overload of assignments taking the place of practice, lack of learning concentration, lack of motivation,
lack of learning comprehension, difficulties of practical class-related job seeking, and feedback. They were each rated on a 5-point Likert-type scale; the higher the score, the higher the online practical class-related stress. In this study, Cronbach’s α of online practical class-related stress was .842.

3.2. College life maladjustment

The scale of ‘adjustment to college’ developed by Baker and Siryk [39] was amended to the Korean version of ‘college life maladjustment’ by Shin and Park [9], who reversely converted the 5-point Likert-type scale of the original version. The variable of college life maladjustment is composed of three items: academic maladjustment, social maladjustment, and emotional maladjustment. Each item was rated using a 5-point Likert-type scale, where higher scores represent higher college life maladjustment. The reliability of college life maladjustment in this study was verified with a Cronbach’s α of .700.

3.3. Resilience

This study adopted the Brief Resilience Scale (BRS), which is one of the most highly recommended measurement tools for this domain [40]. Based on the original BRS [41], a Korean version of BRS [42] was modified for college students during the COVID-19 pandemic. A 5-point Likert scale was used to measure the variable of resilience. Higher scores on this scale mean higher levels of resilience, and the reliability of resilience in this study indicates good internal consistency, with a Cronbach’s α of .846.

3.4. Dropout intention

As stated above, dropout intention includes the following concepts: taking time off from school, leaving school, and transferring to another school. In this study, a single dimension with three questions was adopted from previous studies examining college student’s dropout [16; 29]. The self-report questionnaire was measured on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (Strongly agree). The higher the score, the higher the dropout intention. The reliability of dropout intention by Cronbach’s α was .761.

4. Data analysis

In this study, data were analyzed using two major statistical software. First, SPSS Win version 21.0 was used for various statistical methods: frequency test for the descriptive statistics, reliability test for internal consistency, and Pearson correlation analysis for the strength and direction of the linear relationships among the variables. Second, PROCESS macro version 4.0. was used to analyze the mediation and the moderation test, and the moderated mediation effect was verified by the bootstrapping test [43].

Results

1. Correlation analysis

A Pearson correlation is used to analyze the linear relationships among the variables. Table 1 lists the statistically significant relationships among the four variables: online practical class-related stress, college life maladjustment, resilience, and dropout intention. Online practical class-related stress was positively correlated with both dropout intention ($r = .518$, $p < .01$) and college life maladjustment ($r = .244$, $p < .01$). There was a negative correlation
between online practical class-related stress and resilience (r = -.357, p < .01). College life maladjustment had a positive correlation with dropout intention (r = .325, p<.01), while it had a negative correlation with resilience (r = -.141, p<.01). There was a negative correlation between resilience and dropout intention (r = -.494, p < .01). Resilience had an average value of 4.5465, which was the highest value among the tested variables.

<table>
<thead>
<tr>
<th>Table 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Correlations and descriptive statistics</strong></td>
</tr>
<tr>
<td>Online practical class-related stress</td>
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<tr>
<td>Online practical class-related stress</td>
</tr>
<tr>
<td>College life maladjustment</td>
</tr>
<tr>
<td>Resilience</td>
</tr>
<tr>
<td>Dropout intention</td>
</tr>
</tbody>
</table>

**p < .01

2. Moderated Mediation Effect

The procedure of Model 14 of the PROCESS macro for SPSS created by Hayes [43] was used to analyze whether resilience moderates the mediating effect of college life maladjustment on the link between online practical class-related stress and dropout intention. The moderated mediation effect was examined using the bootstrapping method with 5,000 samples and a 95% confidence interval. Table 2 presents the results of the moderated mediation effect. The direct effects among online practical class-related stress, college life maladjustment, and dropout intention were found to be significant. Specifically, online practical class-related stress increased college life maladjustment (β = .2013, p = .0000), and college life maladjustment increased dropout intention (β = 1.5006, p = .0023), thus showing that college life maladjustment played a mediating role in the link between online practical class-related stress and dropout intention.

The interaction term between college life maladjustment and resilience had a significant effect on dropout intention, and the increase in R² (ΔR² = .0132, p = .0081) according to the interaction term was also significant; therefore, it was found that resilience moderated the relationship between college life maladjustment and dropout intention.

The conditional effect of college life maladjustment according to the value of resilience was significant when resilience was in the 16th percentiles (.3733, p = .0000) and the 50th percentiles (.2324, p = .0000), but it was not significant in the 84th percentiles (.0915, p > .05) Specifically, the effect of college life maladjustment on dropout intention was significant when the value of resilience was between 4.0000 and 4.5000, and not when it was 5.0000. In other words, college life maladjustment had an effect on dropout intention when airline service major students’ resilience were at higher levels of around 4.0000 and 4.5000 on 5-point Likert scale. However, college life maladjustment did not affect dropout intention when students’ resilience was too high, 5.000.

The Johnson-Neyman method, a type of floodlight analysis [44], was used to verify the area in which the moderating effect was conditionally significant according to the value of moderating variable. The effect of college life maladjustment on dropout intention was
significant in the area where the value of resilience was 4.0000 and 4.5000, whereas it was not significant in the area where the value of resilience was 5.0000. In other words, resilience conditionally moderated the relationship between college life maladjustment and dropout intention in the area between 4.0000 and 4.5000.

Conditional indirect effects on the relationship between online practical class-related stress and dropout intention were found to be significant when the value of resilience was high, and when the value of resilience was decreased, the conditional indirect effect was not significant. The moderated mediation effect index was significant (-.1073 ~ -.0182). Therefore, in terms of the effect of online practical class-related stress on dropout intention through college life maladjustment, the moderated mediation effect of resilience was verified.

### Table 2

Analysis of the moderated mediation effect of resilience on the relationship between online practical class-related stress, college life adjustment, and dropout intention

<table>
<thead>
<tr>
<th>Variables</th>
<th>B</th>
<th>SE</th>
<th>t value</th>
<th>p</th>
<th>LLCI*</th>
<th>ULCI**</th>
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<tbody>
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<td>Constant</td>
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<td>4.4399</td>
<td>.0000</td>
<td>.1121</td>
<td>.2905</td>
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<table>
<thead>
<tr>
<th>Variables</th>
<th>B</th>
<th>SE</th>
<th>t value</th>
<th>p</th>
<th>LLCI*</th>
<th>ULCI**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
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<td>-2.0310</td>
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<td>.0416</td>
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<td>.4160</td>
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<tr>
<td>College life maladjustment</td>
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<td>.4890</td>
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<td>.0023</td>
<td>.5384</td>
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<td>Resilience</td>
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<td>.0001</td>
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<td>-2.6645</td>
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<td>-.4899</td>
<td>-.0737</td>
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### Test of highest order unconditional interaction

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<th>R²</th>
<th>F</th>
<th>p</th>
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<td>College life maladjustment × Resilience</td>
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<td>7.0998</td>
<td>.0081</td>
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### Conditional effects of college life maladjustment at values of resilience

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<th>Effect</th>
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<th>t</th>
<th>p</th>
<th>LLCI*</th>
<th>ULCI**</th>
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<td>.0794</td>
<td>4.7041</td>
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<td>.5294</td>
</tr>
<tr>
<td>4.5000</td>
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### Conditional effects of college life maladjustment at values of resilience

<table>
<thead>
<tr>
<th>Resilience</th>
<th>Effect</th>
<th>se</th>
<th>t</th>
<th>p</th>
<th>LLCI*</th>
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<td>4.5104</td>
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Table 1
\[
\begin{array}{cccccc}
\text{Effect} & \text{SE} & \text{t} & \text{p} & \text{BootLLCI}^* & \text{BootULCI}^{**} \\
\hline
.3007 & .0416 & 7.2309 & .0000 & .2189 & .3825 \\
\end{array}
\]

Table 1 continued...

**LLCI = The lower bound of the indirect effect within the 95% confidence interval
**ULCI = The upper bound of the indirect effect within the 95% confidence interval

As shown in Figure 2, the result of visualizing the conditional effect of college life maladjustment was presented by dividing resilience into groups with values of 4.0 and 4.5. Dropout intention increased as college life maladjustment increased in a directly proportional manner. The students with resilience (4.0 out of a 5-point Likert scale) showed lower dropout intention than those with resilience (4.5 out of a 5-point Likert scale) as college life maladjustment increased. However, there was no moderating effect of resilience between college life maladjustment and dropout intention at the highest point. This means that students with resilience (5.0 out of 5-point Likert scale) did not drop out of school because of having too high resilience, regardless of how high their maladjustment to college life was.
Discussion and conclusion

This study was conducted to verify the moderated mediating effect of resilience on the effects of online practical class-related stress and college life maladjustment on dropout intention while targeting airline service major students. The discussion of the study results is as follows.

First, the Pearson correlation analysis proved significant correlations among online practical class-related stress, college life maladjustment, dropout intention, and resilience. Online practical class-related stress was found to be positively correlated with college life maladjustment and dropout intention; these findings are consistent with previous studies showing that students with high academic-related stress were less likely to adjust to college life [28] during the COVID-19 pandemic and more likely to dropout [23]. Moreover, the higher the students’ college maladjustment, the higher the dropout intention [21].

Second, college life maladjustment had a mediating effect on the link between online practical class-related stress and dropout intention. This result is in a similar context as the research result showing that college life adjustment mediated the relationship between college students’ learning flow (concentration) and dropout intention [29]. Airline service major students typically receive more practical education through field-oriented curriculums to become flight attendants. However, airline service major students are now facing stress, because face-to-face practical classes have been replaced by online practice classes due to the COVID-19 pandemic [45], and students therefore cannot experience service-related practice in online practice classes, which is causing college life maladjustment, and which in turn eventually increases dropout intention. That is, the online practical class-related stress experienced by airline service major students during the COVID-19 pandemic is an important cause of their increasing dropout intention. Ultimately, this study showed online practical class-related stress decreases college life adjustment and eventually increases dropout intention.

Third, resilience moderated the relationship between college life maladjustment and dropout intention. In other words, the college life maladjustment experience perceived by airline service major students increased their dropout intention; however, in this process, the effect of college life maladjustment depends on the degree of resilience. Students with high resilience are able to adapt relatively well to college life during the COVID-19 pandemic [11]. On the other hand, when faced with a stressful situation where online practice classes continue due to COVID-19, students with low resilience are more likely to give up on college life than students with high resilience.

Fourth, this study identified the moderated mediation effect of resilience in the path of online practical class-related stress and dropout intention through college life maladjustment. In other words, the indirect effect of online practical class-related stress on dropout intention via college life maladjustment was found to depend on resilience, and as the degree of resilience increases, the effect of college maladjustment on dropout intention gradually decreases. This means that, even though airline service major students experience college life maladjustment due to online practical class-related stress, airline service major students with high resilience have less dropout intention than students with lower resilience. In the COVID-19 pandemic situations, airline service major students experience college life maladjustment due to high and low online practical class-related stress, but not all of them give up on their studies (majors) or leave school, and resilience serves as a mechanism by which online practical class-related slows the negative path leading to dropout intention through college life maladjustment.
This research for the first time analyzed the moderated mediation effect of resilience on the effects of online practical class-related stress and college life maladjustment on dropout intention while targeting airline service major students. Thus, the meaningful academic and practical implications need to be derived based on the research results presented here for future studies. From the academic perspective, previous studies have focused on either the direct effect of college students’ stress due to COVID-19 on college life adjustment [11; 12] or the direct effect of academic-related stress on dropout intention [23]. However, this study used an integrated research model with three variables (online practical class-related stress, college life maladjustment, and dropout intention) while adding the moderated mediation effect of resilience, and it can suggest more insights that can be applied to the research domain of practical-oriented major students (e.g., cooking, nursing, beauty, etc.)

From a practical perspective, professors or faculty members should provide specific guidelines for online practical classes and develop innovative online practical class-oriented content and method along with financial support for the university’s online classes to reduce students’ stress derived from online practical classes [36]. According to Clark [46], most frustrations experienced by online learners are caused by slow, insufficient, and inadequate feedback. Thus, various, fast, and satisfactory feedback systems using the latest technology should be applied in online practical classes.

However, there is a limited ability to reduce online practical class-related stress stemming from the COVID-19 pandemic. It may be more effective and feasible to educate airline service major students about resilience, which can weaken the vicious circle of high dropout intentions when college maladjustment is high. Students with high resilience will focus on college life and actively seek out what they can do rather than waste their time in school or leave school, as they do not blame the COVID-19 pandemic for their stress. Thus, it is very urgent to reinforce resilience and develop resilience programs that can help students alleviate college life maladjustment stemming from online practical class-related stress.

Nevertheless, there are research limitations that could be supplemented and upgraded in future studies. For example, this study used a single dimension to measure all variables (online practical class-related stress, college life maladjustment, dropout intention, resilience). If each variable’s multiple sub-dimensions were used in future studies, it would result in more diverse results. Further, this study collected data from sophomores, juniors, and seniors, thus excluding freshmen, who are assigned more liberal arts classes than practical classes in terms of the airline service major curriculum. Compared to sophomores, juniors and seniors take more practical classes, so their online practical class-related stress could be higher. However, since they had been in college longer than sophomores, their maladjustment to college life or dropouts may be lower. This study also collected data from three universities in South Korea, which means that these results cannot be generalized to populations in other grade levels of university or in other universities. For future studies, if more varied samples from different universities are collected, and if the differences by grade level are investigated, it could contribute to studies of airline service major students aiming to validate the moderating effect of resilience on the mediating effect between online practical class-related stress and dropout intention through college life maladjustment.

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Information about the authors

**Yoona Lee**
(South Korea, Seoul city)
Master Degree of Aviation Tourism
Instructor
Hospitality & Tourism Management
Sejong University
E-mail: yoona2189@naver.com
ORCID ID: 0000-0001-8479-1257

**Aeeun Jeon**
(South Korea, Seosan city)
Doctor of Philosophy
Associate Professor
Department of Aviation Tourism
Hanseo University
E-mail: 140368@daum.net
ORCID ID: 0000-0003-0110-7048


