


# The Effect of Psychological Safety on the Performance of Students in Graduate-Level Online Courses

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## ABSTRACT

Psychological safety underpins high-performing teams in the business world. This study explored the effects of the feeling of psychological safety on graduate students participating in online courses. Psychological safety plays a crucial role in student grade outcomes and even the emotions the student feels in the online classroom environment. A significant difference in grade outcomes was found along with an effect size of 1.813 when comparing final grade outcomes between courses with a felt level of psychological safety to courses that did not reach a level of psychological safety. The presence of psychological safety affected the individual students' feelings by lowering the feeling of sadness and raising the feeling of excitement. Therefore, when creating and delivering online graduate-level courses, it is imperative to use specific teaching behaviors and design strategies to support those behaviors to build psychological safety within the online classroom and foster high performance by students.

## KEYWORDS

Amy Edmonson, higher education, Komprehend, George Hanshaw, Los Angeles Pacific University, online, psychological safety, student performance, Timothy Clark

## INTRODUCTION

Psychological safety is not a new concept. The term can be traced back to the early 1950s. Some give credit to Carl Rogers (1951) in his work where he began to apply his theoretical therapeutic approach towards psychology. He discusses the importance of providing a supportive environment for clients to establish the conditions necessary for creativity (1951).

Schein and Bennis (1965) are generally given credit for coining the term psychological safety. This is primarily due to their work in the area of organizational psychology and leadership. Their seminal research into teams and organizational culture set the stage for researchers such as Amy

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Edmondson (1999), who codified the term psychological safety with her research on organizational performance. Edmondson (1999) found that teams that felt psychological safety performed better than teams that did not feel a sense of psychological safety.

Recently, the concept of psychological safety has received renewed interest thanks in part to the Google study, Project Aristotle (Duhigg, 2018); Amy Edmondson's research and book, *The Fearless Organization* (2018), based on her work and research findings on the effects of psychological safety in the workplace (1996, 1999, 2003, 2006); and Tim Clark's book, *The Four Stages of Psychological Safety* (2020). All of the previously mentioned literature found that psychological safety is the primary component required for creating high-performing teams. Duhigg (2018) and Hu (2018) found psychological safety to be more important than any other component or trait of a team.

This study was conducted to explore if the presence or feeling of psychological safety within graduate-level asynchronous instructor-led online courses affected learning and the student experience, similar to the way psychological safety creates the environment that allows for a team to be high-performing. Chu (2022) found a decrease in learning when students transferred to online learning due to COVID-19. This decline in learning happened even though a widely held belief is supported by previous studies showing no significant difference between online and in-person learning (Wu, 2015). Wu (2015) conducted an empirical literature review supporting the findings that most studies show no significant differences in outcomes between the two modalities. Hanshaw, Helm-Stevens, and Lopez (2019) found that when online courses are built from a learner-centered perspective, these courses are often preferred by students over in-person courses. This contradiction is compelling and offers an opportunity to explore further what works for online learning and to discover if there is a need for psychological safety to undergird online courses to facilitate high-performing classrooms and affect the student learning experience. For the purposes of this study, high-performing classrooms are ones where students achieve high-grade outcomes and feel more positive emotions toward the course.

## LITERATURE REVIEW

Psychological safety has a natural relationship with education. The idea that learning is an inherently social and affective enterprise has long existed (Dewey, 1916; Dweck, 2007; McLeod, 2007; Noddings, 2013; Vygotsky, 1978). Psychological safety is fundamentally about freedom from fear, embarrassment, or humiliation in groups (Edmondson, 1999). Looking at online learning through the lens of psychological safety allows one to view motivation and motivating students from an intrinsic level rather than the typical extrinsic "carrot or stick" approach. This aligns more with Dan Pink's view of motivation and motivating people as a need to influence internal drivers (2011).

Even with this natural connection, there are few scientific studies of the concept in formal academic settings. Some studies have been conducted on the topic in academic settings (Baeva & Bordovskaia, 2015; Kislyakov et al., 2014; Reeves et al., 2010), but the focus was more closely related to psychological well-being rather than psychological safety and how it was defined by Schein and Bennis (1965). There is relative silence on education and psychological safety in online classes, even though the literature on online education is massive and likely to increase further in the post-COVID era. Weiner, Francois, Stone-Johnson, and Childs (2021) researched the principal's role in psychological safety and organizational learning during the pandemic when online learning was thrust upon most of the world. Even this did not specifically address psychological safety in the higher education online learning environment.

For the purposes of this study, the term psychological safety is not synonymous with the psychological well-being of an individual. Psychological safety is used in this study regarding performance and is felt at a team level (Clark, 2020). It is essential to identify the use of the term psychological safety because it is often used within literature as a term that indicates or contributes to an individual's psychological well-being. While there are a large number of studies on the psychological well-being of students attending courses online and in person (Butnaru et al., 2020; Tyumaseva et al.,

2022; Manisha & Pooja, 2021), there are few studies on the effectiveness of psychological safety on student performance. For the purposes of this study, psychological safety is felt at a team level (Clark, 2020) and is an environment where teams and individuals can thrive from a performance perspective.

### **Leadership in Psychological Safety**

Psychological safety operates and is felt at a group or team level as opposed to the individual level (Clark, 2020; Edmonson, 2018). According to Clark (2020), creating an environment of psychological safety is incumbent upon the leader. The leader sets the environment and is responsible for creating the environment where team members feel safe to take risks and be vulnerable. This dependency upon the team leader to create a psychologically safe environment is a reason for further research on the effects of psychological safety in graduate-level online courses. Utilizing the teacher as a leader framework and the findings from Edmonson (1999) and Clark (2020), it can be posited that the instructor is the positional leader within the online classrooms and courses and is responsible for creating an environment of psychological safety with the class, and the instructor has control over creating the classroom environment.

Utilizing the teacher as a leader framework is consistent in the literature, and it is thought that this framework can be used to create psychological safety in the online class environment. The teacher as a leader concept is not new. The term and concept have been used for many years. When teachers take on the leader role in their classroom, they create an environment where students can succeed. This concept has gained traction in the last decade because of research that shows how teachers who are leaders have more engaged students and improved student outcomes. Weiner et al. (2021) explored psychological safety more from a well-being perspective and utilized a school administrator as the leader to care for the teachers and students during the pandemic when schools primarily taught online. The concept of “teacher as leader in the classroom” refers to the idea that a teacher should not just facilitate learning, but should also take on a leadership role in the classroom. A leader in the classroom creates a positive and productive learning environment, sets clear expectations and goals, and effectively manages the classroom to create an environment where all students can thrive. Additionally, a teacher as a leader in the classroom builds relationships with students, families, and colleagues while continuously seeking professional development opportunities to improve their practice (Cosenza, 2015; Mangin, 2010).

In viewing the online classroom from the perspective of being a team and the instructor or professor as the leader of the team, a more strategic perspective of individual student performance within the online classroom is gained, with psychological safety being utilized as a framework to study in order to explore its effects on the individual student within the team. Psychological safety is the creation of an environment and is separate from pedagogical skills and techniques. Viewing student performance from a psychological safety perspective creates the unique opportunity to explore the possibility that psychological safety undergirds an individual student’s performance within the online classroom and creates a space where more students can succeed and thrive. With the online classroom, just as in work teams that do not feel psychological safety, some individuals thrive and succeed within the environment. When a team is high-performing, most, if not all, individuals thrive and succeed (Clark, 2020; Duhigg, 2018; Edmonson, 1999 and 2003).

Because psychological safety is an environment that is felt at a team level and established by the team leader, the professor or instructor has a high level of control over whether or not psychological safety is created within the online classroom. Suppose it is found that psychological safety undergirds the performance levels of students. In that case, the professors and instructors will have a framework to utilize and ensure the effectiveness of their pedagogical approaches.

Strategies and tactics utilized in the online classroom are not uniformly effective from one class to another. Hanshaw, Helm-Stevens, and Pfeifer (2022) found that the use of mindset language and strategies within graduate online courses had no effect on the outcomes of the students when compared to a control group. In this case, it is posited that the outcomes were not affected because

the students already possessed a growth mindset perspective. The study also examined the internal locus of control and found no difference between the control and treatment groups. This is counter to other studies and findings, such as Dweck (2007).

### Psychological Safety Definition and Team Traits

Much of the literature connects psychological safety to the ability to be vulnerable (Clark, 2020; Duhigg, 2018; Edmunson, 2018.) This study chose to use the definition articulated by Clark (2020), which defines psychological safety as rewarded vulnerability. When there is a level of psychological safety within a team, the team members feel free to learn, offer ideas that may or may not be complete, ask questions, and challenge the status quo. Team members are able to do this without the fear of being made to look inferior to their colleagues.

Several traits help identify if a team has achieved psychological safety. Therefore, defining some traits that are often mistaken for psychological safety is critical. According to Clark (2020), Duhigg (2018), and Edmunson (2018), some of the incorrectly identified traits are:

- Niceness within a team
- Team cohesion
- Mental well-being
- Friendliness outside of the team
- High level of agreement
- Using specific language
- Agreeableness
- Allowing others to say whatever they want and not being able to challenge their comments

Individuals within psychologically safe teams tend to speak with candor, often disagree, and work through intellectual and creative friction (Clark, 2020; Duhigg, 2018; Edmunson, 2018). How these traits are displayed by an individual within their team varies by person and team. In psychologically safe teams, the intellectual and creative friction is worked through and talked through in a way that allows for both team and personal growth.

### The Four Levels

Pairing the definition of psychological safety as rewarded vulnerability with the four levels of psychological safety framework posited by Clark (2020) provides the overall framework to identify courses that achieved some level of psychological safety or no level of psychological safety. The four levels of psychological safety posited by Clark (2020) are inclusion safety, learner safety, contributor safety, and challenger safety. See Table 1 for definitions.

Table 1.

Stage	Definition
Inclusion Safety	“Inclusion safety satisfies the basic human need to be included, accepted, and belong. It’s not expensive to be yourself. You are accepted for who you are, including your unique attributes and defining characteristics.” (Clark, 2020)
Learner Safety	“Learner safety satisfies the basic human need to learn and grow. You feel safe in the learning process—asking questions, giving and receiving feedback, experimenting, and even making mistakes.” (Clark, 2020)
Contributor Safety	“Contributor safety satisfies the basic human need to make a difference. You feel safe to use your skills and abilities to offer a meaningful contribution.” (Clark, 2020)
Challenger Safety	“Challenger safety satisfies the basic human need to make things better. You feel safe to speak up and challenge the status quo when you think there’s a need or opportunity to improve.” (Clark, 2020)

The pinnacle of psychological safety is a team whose members feel free to and often do disagree. Team members speak with candor, and the team hierarchy regarding one's authority to speak up is flat. It is considered harmful if one does not speak up because any ideas, thoughts, or questions left unsaid hurt the team's ability to solve complex problems creatively. In a psychologically safe team environment, the team comes first, and individuals are rewarded for their vulnerability.

### **Psychological Safety in the Online Classroom**

It is important to note that a class deemed not to have reached a level of psychological safety does not mean the class was inferior or did not meet requirements. Much like the business world, a team may not attain a level of psychological safety, but the team can still perform professionally. Without psychological safety, a team will never reach a level of high performance (Edmonson, 2018; Clark, 2020).

Psychological safety is a natural fit for the online classroom. In Clark's model, learner safety is the second stage. This stage requires a feeling of safety within the learning process, which is characterized by the ability to ask questions, give and receive feedback, experiment, and make mistakes (Clark, 2020). This author posits that within the online classroom, all four stages are felt and expressed by the students in specific ways, which may or may not be different from students in an in-person class (See Table 1). Utilizing the four-level framework made it possible to discern the level of psychological safety within a classroom even though a specific framework was not built into the course, and the end-of-course survey did not have questions specifically meant to rate the level of psychological safety within the online classroom.

Instructors can build levels of psychological safety within their classrooms. When psychological safety is created by the instructor, the student can feel a certain effect. For example, if the instructor creates a warm and welcoming environment, the student may feel a high level of inclusion. The table in Appendix A specifies some instructor actions to create the different levels of psychological safety and how the levels are felt by the students. The list in the table is not meant to be exhaustive. It is meant to facilitate the ideation process for instructors.

### **ETHICS**

This paper does not measure or intend to measure a student's psychological well-being. For this study, psychological safety is the felt environment within the online classroom. The data used in this study did not contain any student information, nor could the information be traced back to an individual student. The data was from anonymous end-of-course surveys and overall grade point average per course. Individual grades were not utilized, nor were they available for this study. The number of students was counted at a course level and used for the purpose of inclusion of the overall course data into the study.

### **PURPOSE AND HYPOTHESIS**

How does psychological safety affect a graduate-level student's outcome and experience in the online environment?

Now is the time to study the effects of psychological safety in the online classroom for several reasons.

- A decrease in learning occurred when most university courses went to the online format due to the pandemic (Chu, 2022). The decrease in learning during this transition conflicts with the absence of significant differences found before the pandemic.

- Psychological safety is the top construct required to create high-performing teams in the business world, and in teams with high psychological safety, more individuals thrive (Clark, 2020; Duhigg, 2018; Edmonson, 1999 & 2018).
- The leader is responsible for creating the team environment, and the teacher as a leader concept is well known and seems to fit the criteria (Cosenza, 2015; Mangin, 2010).
- Pedagogical practices and strategies can affect students' performance differently depending on the class (Hanshaw et al., 2022).

To begin discovering the answer to this question, it was important to look at more than just grade outcomes from the course. Grade outcomes are an essential aspect of the course and student experience, but in and of itself, the grade outcome is just one part of the student experience. When looking into psychological safety within the online classroom, looking at the student with a holistic lens is important. To accomplish this, the authors investigated course outcomes and the emotions behind the students' statements.

It was posited by the authors that there would be better student outcomes when a psychologically safe course cumulative GPA is compared to the same course that was deemed not to have attained a level of psychological safety. The researchers also posited that the students would have greater positive emotions (happy, excited) than negative emotions (sad, bored, fearful, angry) within the classroom.

Two hypotheses were:

- $H_a1$ : Students participating in a class deemed to have psychological safety will have higher grade outcomes than students in a class deemed not to have attained a level of psychological safety.
- $H_o1$ : Students participating in a class deemed to have psychological safety will not have higher grade outcomes than students in a class deemed not to have attained a level of psychological safety.
- $H_a2$ : Students participating in a class deemed to have psychological safety will have a higher level of positive emotions and lower level of negative emotions expressed towards the course than their peers participating in a class deemed not to have attained a level of psychological safety.
- $H_o2$ : Students participating in a class deemed to have psychological safety will not have a higher level of positive emotions and lower level of negative emotions expressed towards the course than their peers participating in a class deemed not to have attained a level of psychological safety.

Both of the hypotheses replicate the concepts and findings that have come from business studies. When people are engaged in a team with high psychological safety and stated high expectations, the team achieves more, and individuals on the team have greater positive feelings towards the team. Correlations between business and academia can be drawn through grade outcomes and emotions delineated from the written responses of the end-of-course survey.

## METHOD

This study explored the relationship among psychological safety, grade outcomes, and the emotions felt by the students while participating in a graduate-level online course. It is important to note that while the author uses the term student, no individual students were queried to define their emotions during the course. The emotions were determined through the use of machine learning software to determine the feelings emoted within the free-form responses in the end-of-course survey. The Komprehend API was used to conduct the analysis of the emotions. Komprehend was chosen because of its sophisticated natural language processing and high level of accuracy when determining the emotion within a written statement. Komprehend utilizes a trained classifier that uses Convolutional Neural Networks (Covnets) on a tagged dataset created by their team (Komprehend, n.d.). In this

case, the term student is used when referring to an overall composite of the students' feelings and emotions within an individual class.

The research utilized qualitative and quantitative scale data. The qualitative data was used to delineate the emotional feelings towards the course. The qualitative data went through a specific coding process to determine numeric levels of sentiment and emotions felt within the course by the students.

The research utilized information from 108 graduate-level courses taught in 2021 and 2022. The data gathered was end-of-course survey data that included 5-point Likert scale survey responses, open-ended questions with free responses, and cumulative GPA for the course. The cumulative GPA for the course was gathered from a dashboard that held the information. All data was free from student identifying information. A total of 15,256 total questions were responded to by students within the end-of-course surveys for the 108 courses, and 1,412 responses were free-form responses.

From the end-of-course survey, Likert scale questions that related to specific stages of psychological safety were identified. Also, sentiment and emotional analysis were conducted on the free-form responses from the survey.

Courses were then identified for inclusion in the research. Care was given to mitigate the possibility of grade inflation. The criteria for inclusion in the study were determined by the primary investigator through conversations with multiple experts, in fields from statistics to psychological safety. The following criteria were required for a course to be included in the study.

- Minimum two instructors taught a section of the course within the two-year period. This was chosen to help reduce bias and give a broader perspective. Using courses with two or more instructors was specifically chosen to reduce individual subjectivity and enhance grading objectivity.
- The course was taught more than two times. Requiring the course to have been taught more than two times provided increased data points and ensured variability within the courses.
- The total student population could not have received the same grade. It is thought that if the students all received the same grade, specifically the grade of "A," their statements in the end-of-course survey would be biased.
- A minimum of 3 separate students must have responded to the end-of-course survey. This was chosen to reduce outlier influence and enhance the reliability of the findings.

The inclusion criteria enabled 57 of the original 108 courses to be evaluated for this research project. The researchers found it important to have strict limitations on the number of student responses because psychological safety is felt at a team level. The 57 included courses contained 1,071 free responses that were used to complete the sentiment and emotional analysis necessary for creating the composite student feelings and emotions for each course. The free responses from the 57 courses accounted for approximately 76% of the free responses made in the 108 courses. The 1,071 free-form responses represent a greater than 95% confidence level for the emotional and sentiment analysis and the GPA calculations. The anonymous data was comprised of 1,291 students in total. After inclusion parameters were run, the final data set comprised responses from 916 students, which is a greater than 95% confidence interval for the sample size. Due to the confidence intervals, the authors deemed the sample size sufficient. This was further supported by the effect size calculations shown in Appendices C and E.

### **Psychological Safety Rating**

Whether a course achieves a level of psychological safety was determined by evaluating specific criteria obtained through the end-of-course surveys. The end-of-course survey contained both Likert and free responses. The Likert scale statements were evaluated to determine if they related to one of the four stages of psychological safety as posited by Clark (2020). Eight of the Likert statement

responses rose to the level of connecting to a specific stage of psychological safety. No questions rose to the final stage of psychological safety, the fourth, challenger safety.

## Likert Statements

Scholars such as Timothy Clark and Amy Edmonson posit that the concept of psychological safety is the perception of individuals on a team toward the consequences of taking interpersonal risks. Timothy Clark (2020) coined the term “rewarded vulnerability.” When team members feel a level of psychological safety, they are more willing to speak up, share their opinions, present ideas, and even make mistakes. This study utilized the four stages of psychological safety, as posited by Clark (2020), as the guiding framework. Each of the stages represents a progression in the level of psychological safety within a team. The progression begins with inclusion safety, moves to learner safety, then contributor safety, and then culminates in challenger safety, where team members feel free to challenge the status quo.

The Likert-style questions were reviewed and evaluated to determine if and where they aligned within the four stages framework.

- Inclusion Safety
- My instructor demonstrated respect for the students.
- I learned relevant information in this class that I can apply to my life.
- Learner Safety
- My instructor responded to my requests for assistance within one business day.
- My instructor’s feedback helped promote active learning.
- The learning activities and assignments promoted the achievement of the stated learning objectives.
- Contributor Safety
- My instructor’s interactions made the course material interesting and relevant.
  - My instructor used the grading criteria (rubrics) as a basis for evaluating my work.
  - Challenger Safety
  - No questions appear to support this level of psychological safety specifically. This is an area for improvement in future surveys.

Each Likert scale statement was chosen based on its capacity to gauge the students’ feelings and experiences directly related to the four stages of psychological safety. The linking of the specific survey questions to a stage within the four stages framework was done to provide an evidence-based approach to measuring psychological safety within the context of our online courses.

A mean score was then calculated for the individual statement score. An overall mean was then calculated, which is the score used to determine if the Likert ratings support the course being deemed as having some level of psychological safety.

## Free Responses

For the textual analysis of the free responses written by the students, the Komprehend API was used. The Komprehend API is a cloud-based service that provides sophisticated natural language processing (NLP) over raw text. The service includes 13 APIs to evaluate text. The Komprehend API is pre-trained on extensive textual corpora. These models inherently discern sentiment and emotion, even within nuanced circumstances. The Komprehend API was chosen because of its robust pre-existing models, which also negated the need to retrain the data set. For the purposes of this study, sentiment and emotion analysis were selected.

To ensure reliability, student responses went through the following preprocessing steps prior to the analysis.



- Standardization of text to lowercase
- Tokenization
- Lemmatization

A specific program and coding were used to evaluate the free responses for keywords that were connected to each level of psychological safety posited by Clark (2020). The programming language mentioned was Python, specifically using libraries from CSV, Paralleldots by Komprehend, and NLTK. These libraries were used to help output the data, run the sentiment and emotion analysis, and find proper keywords, respectively.

For the test process, the program took two inputs at a time. One was the keywords for the different levels of psychological safety, and the other was the student response data. It would then fix any issues in the student response, such as erroneous capitalization, to compare the data as accurately as possible. The keywords were then put into a function that used the NLTK library to find appropriate synonyms to catch any use case in the comparison function. The student data was then compared to the keywords before being counted toward the appropriate level. This data was then output as a CSV file that was imported to the working statistics sheet. The next step was to run the same test on the student data to find sentiment analysis and emotional analysis. Using the Paralleldots API from Komprehend, the student responses were designated a score for emotion and sentiment that was imported to the same datasheet. The student responses did have to meet the criteria of having more than five for the class for the analysis to be optimally effective and accurate.

The trustworthiness and reliability of the data were examined by the researchers reviewing a random sample of results. The samples were determined to be satisfactory interpretations of the text. The outputs were then mapped to the four stages of psychological safety, as posited by Clark (2020).

### **Determining if Psychological Safety Was Present**

In order to determine if psychological safety was present within an online course, a three-dimensional framework was created from the current data set. The three dimensions were:

1. Mean score of 4.6 or greater in the Likert statements relevant to a psychological safety stage (one standard deviation above the mean).
2. Free response evaluation resulting in a minimum count of 3 items under the levels of psychological safety.
3. A sentiment analysis score of positive is greater than 0.4, and a score of 0.2 or less for the negative sentiment.

If the course met all of the above criteria, it was considered to have attained a level of psychological safety. If the course did not meet all of the criteria, it was deemed not to have attained a specific level of psychological safety within the classroom.

Twenty-six of the courses were deemed to have attained a level of psychological safety, and 31 were deemed not to have attained a level of psychological safety.

## **RESULTS**

An independent sample t-test was conducted on both the grade outcomes and emotional levels in the responses to determine if there was a significant difference between students who participated in a classroom deemed to have attained a level of psychological safety versus those who participated in a class deemed not to have attained psychological safety.

## Grade Outcomes

Levene's Test for Equality of Variances was significant,  $<0.01$ . There was a significant difference of  $<0.001$  between the grade outcomes of students who participated in a course deemed to have attained a level of psychological safety versus those who participated in a course deemed not to have attained a level of psychological safety. (See Figure in Appendix B.)

The effect size was also significantly large. Cohen's D calculation found a significant effect size of 1.813. The presence of psychological safety within online graduate programs has a profound effect on the grade outcomes for students. (See figure in Appendix C.) The null hypothesis can be rejected, and it can be concluded that the alternative hypothesis is supported. Students participating in a class deemed to have psychological safety will have higher grade outcomes than students in a class deemed not to have attained a level of psychological safety.

## Emotion Outcomes

Levene's Test for Equality of Variances was not met for any of the emotions tested. Using the significance calculation when equal variances are not assumed showed a significant difference between the emotion of sadness felt ( $<0.001$ ) in the classroom and the emotion of excitement felt (0.001) in the classroom. No significant difference was found between the emotions of bored, happy, fearful, or angry. (See Appendix D for details.)

The effect size for the feeling of being sad or excited was large. The effect size for feeling sad was -0.924, which is a large effect size. This means that students who participated in a class where psychological safety was felt were less likely to feel the emotion of sadness by approximately 92% compared to their counterparts in courses where psychological safety was not felt.

The effect size for the feeling of excitement was 1.606. (See Appendix E for details.) This is also a significant effect size. The students in a classroom where psychological safety was felt had a much more significant feeling of excitement than the students in online classes who did not feel psychological safety.

These outcomes are significant because psychological safety is not about being nice to one another or getting along with each other. Psychological safety is more about feeling challenged, bringing one's whole self to class and meeting the challenges that arise in the classroom. It is about being vulnerable and having that vulnerability rewarded. In the online classroom, this can take many different shapes.

## DISCUSSION

Psychological safety in the online classroom is essential for student outcomes and overall well-being. Because of the significant findings, the author posits that it is crucial to train instructors and professors to facilitate an online course utilizing behaviors and strategies that increase the levels of psychological safety within the online classroom. Martin (2020) states, "One of the best ways to build psychological safety is for it to be articulated as a value" (p. 37.) This seems like a natural starting point and a simple way to begin ensuring the students feel a sense of psychological safety. Several themes about the instructor that emerged within the written comments of the courses were judged as having a level of psychological safety. The number of written responses on specific actions bolsters the teacher-as-leader concept because the leader's actions directly affect the environment. The themes in the written responses can aid in defining characteristics instructors can develop to help create psychological safety in the online classroom. Those traits are instructor presence, being available, setting expectations, creating clarity, and giving constructive feedback. How courses are designed may also help the instructor facilitate online courses where there is a level of psychological safety felt by the students.

## **Instructor Traits, Characteristics, and Actions**

### *Articulate Psychological Safety as a Value*

Articulating psychological safety as a value can be done immediately in online classrooms. To do this, the teacher should make an announcement that defines clear expectations, state why the content is important for the student, and then make an affirming statement that the instructor believes in each student's ability to learn, grow, and perform well in the class. Findings from Hattie (2018) support this imperative. A teacher's estimate of achievement has an effect size of 1.29 on student achievement (Hattie, 2018). This factor is the third strongest influence on student achievement. The three characteristics stated above are also thematically found in the written feedback from students. Typical comments included: "(My instructor) was very thorough with instruction and expectations." "I'm so glad I had Prof (name) as my first professor! He set the expectations high for all students as well as for other professors."

Articulating psychological safety as a value is a great start. Still, it will not create the desired environment if the leader's actions do not further a psychologically safe learning environment. Instructor presence and feedback are two critical areas in the online classroom for creating psychological safety and a high-performing classroom.

### *Demonstrate a High Level of Instructor Presence*

Instructor presence can mean many things to different people. Ni She et al. (2019) outline critical elements of what this study considers instructor presence. Ni She et al. (2019) define instructor presence as three distinct types: social presence, teaching presence, and cognitive presence. The student's written responses in the end-of-course survey support that all three critical elements are valuable for creating psychological safety within the online classroom.

While three elements create instructor presence, some techniques and strategies overlap the different elements. They can be used to build multiple elements and the overall instructor presence.

Social presence encourages student and instructor interaction. Social presence can be built in numerous ways. For example, in asynchronous courses, the use of video and voluntary live sessions received many comments from students in courses with a high level of psychological safety. Typical comments included:

- "Her weekly zoom meetings were of great help!!"
- "I really appreciated how she held a weekly Q&A to discuss any questions or concerns with students!"

Teaching presence primarily concerns the course's administration, management, and structure. If someone has a high level of teaching presence, they respond to emails quickly (generally in less than 24 hours), post timely feedback, and engage in the online course. The majority of comments that fit under teaching presence were about timely feedback and responses to emails.

- "(Instructor) was quick to respond to any questions the class may have had or emails I sent to him."
- "My professor responded to my questions very promptly and always encouraged me to keep doing the good work."

Cognitive presence is the content knowledge. Students want instructors to share their experience and knowledge within their field of expertise. This overlaps some with giving feedback. Instructors can earn greater cognitive presence when they interweave their experience into the feedback for the student. Other ways to build a cognitive presence are through stories about their experience in the field and posting these stories in the announcement space. The discussion forums also allow the instructor to build a cognitive presence. Instructors who led courses with high levels of psychological safety

utilized the discussion forums to build cognitive presence, but they also built a social and teaching presence in the process.

Typical comments from students to support these strategies included:

- “(Instructor) did a great job interacting with us students during discussions, weekly coffee meetings, Monday morning announcements, and throughout the course. (Instructor) was able to share both personal and professional experiences to help drive home the lesson being taught.”

In all of the examples above, the strategies overlap the different elements of instructor presence. For example, when an instructor uses voluntary live sessions, they build all three elements of instructor presence: social, teaching, and cognitive. Conversely, there were negative comments in the courses that did not exhibit a high level of psychological safety on the three elements that create instructor presence.

### *Setting Expectations*

Setting expectations is critical in creating high-performing teams (Clark, 2020; Duhigg, 2018). Without expectations from the leader, the team does not know how well they have to perform. Providing clarity and setting expectations helps to create an environment of psychological safety within the online classroom. Numerous comments from the end-of-course survey support this. Typical comments included:

- “He set the expectations high for all students as well as for other professors,”
- “(Instructor name) was very thorough with instruction and expectations.”
- “Expectations were clear from the beginning. He did a great job! The class was harder than I thought, which is expected for a master’s level class. Thank you.”

### *Giving Feedback*

Constructive feedback connects with a higher level of psychological safety by creating the intellectual friction learners need to grow. Psychological safety is not about being liked. It is about creating the friction and space a student needs to grow. Giving constructive feedback that clearly states how students can improve supports students in multiple ways and enhances an instructor’s cognitive presence in the classroom. The following were typical comments written by students in online courses that exhibited psychological safety.

- “He gave feedback in my assignments and helped me find opportunities to improve. He asked great questions and was involved!”
- “He also gave thoughtful feedback on submissions.”
- “Takes time to provide thoughtful feedback on all assignments.”
- “My instructor always provided feedback on all of my assignments, encouraging me to strive for greatness in all that I produced for the class.”
- “(Instructor) really stretched my ability as it pertains to writing, he provided feedback without judgement to ensure my success.”

One technique instructors can immediately implement to increase the level of psychological safety the students feel is to use personalized video feedback. When creating feedback videos, the specific behaviors are to use the learner’s name and give corrective and perspective feedback. For example, perspective-type feedback lets the learner know there is another way or perspective to view the topic or design a project. This gives the instructor the opportunity to help the learner engage deeper in critical thinking and help the student create their mental model of how two differing views

may be correct and present simultaneously. The authors posit that this will help foster the fourth level of psychological safety, challenger safety. A typical free response about video use in the online classroom was, “Video feedback is so much better than written; I appreciate the level of detail given to the assignment feedback, it really helped, especially with the three-part project. All professors should be doing this!”

## **Course Design**

Content and strategies can be built into the online classroom that help the instructor build psychological safety within their team of students. The direct effect of design on psychological safety was not studied; rather, this study focused on how to use design to help the instructor clearly exhibit the traits and actions that build psychological safety within the online environment.

### *Articulate Psychological Safety as a Value*

Articulating psychological safety as a value can be accomplished in several ways within an LMS. Typical practices are adding notes within announcements and quotes or statements in weekly overviews (if they are used in the course.) Articulating psychological safety as a value can also be a way to expand instructor presence by using video to help articulate this message.

### *Instructor Presence*

There are many ways to increase instructor presence in online courses through design. Often, the specific mechanisms used are dependent upon the LMS. For example, in the Brightspace D2L LMS, intelligence agents can be triggered to send personalized automated messages from the instructor. The messages can contain a video from the professor along with other helpful content and tips. The messages can use replace strings such as Hello, {FirstName} to personalize the message. The personalization and use of video help to build instructor presence (Ni She et al., 2018).

Using video in discussion responses and feedback is another way the LMS and design can help to build instructor presence. It is important to note that if the LMS does not support captioning of videos, an external tool will be required to ensure accessibility standards are met.

### *Set Expectations*

Setting expectations is critical in the areas of assignments, discussions, and overall quality of work within the course. This means the directions are clear, and the rubrics align with the assignment requirements. However, suppose a rubric does not align well with an assignment’s requirements. In that case, the student’s feeling of contributor safety within the course can be damaged, diminishing the student’s performance within the course.

For discussions, this also means there is a level of clarity. For example, is there a specific word count requirement, or are the discussions more like an in-app experience? Regardless of the university’s defined purpose for the discussion, expectations must be clearly stated for the student.

### *Giving Feedback*

There are multiple ways an instructor can give feedback within most LMSs. Typical ways are to mark directly on the papers within the LMS. The instructors can handwrite notes directly on the paper by utilizing the touch screen abilities of many laptops and drawing abilities in the LMS. This “personal touch” can also build instructor presence by giving feedback.

While these are just a few examples of possible activities to use, it is essential to note that the strategies must be congruent with the course being taught and the expectations of the students.

## FURTHER RESEARCH

One area for further research is to identify if students within a psychologically safe online classroom turn in higher-quality work than their counterparts in classes that do not exhibit psychological safety. The teams who feel higher levels of psychological safety within the work environment typically produce more creative and effective work due to the intellectual and creative friction in psychologically safe teams. Will this transfer over from the business team to the academic classroom? The author posits that it will if there are design strategies put in place to take advantage of the intellectual and creative friction felt by psychologically safe teams. One example is requiring peer review of work and adjusting the project depending upon the feedback received prior to posting the work for grading.

Because of the significant effect sizes for the feeling of sadness and excitement, it is worth researching the effects of psychological safety in the online classroom on retention and degree completion. This may positively affect the traditionally lower retention rates of online students. One question to ask is: Do the feelings associated with psychologically safe classes motivate students to complete their degrees?

To help support the research in the area of psychological safety, the author intends to add specific questions to the end-of-course survey to assist in determining the level of psychological safety felt by the students in the class as well as questions that ask about their specific emotions towards the course. This data point will help to more accurately determine the levels of psychological safety felt within the classroom. This is a critical data point to help inform instructor and design practices that may help students thrive and perform better in online classes.

## LIMITATIONS

As with any research, there are limitations to this study. The Kognito software and machine learning code provided the means to accurately determine if psychological safety was felt within the online classroom. However, the study was not able to clearly determine the stage of psychological safety felt by the team. This limitation is stated as an area of further research. Adding specific questions to the end-of-course surveys will help hone the ability to define the specific stages felt by the team.

Determining the specific questions for the end-of-course survey is something that requires validation. For example, should the survey created by Clark be used with modifications for the classroom, or is a different instrument required?

Another limitation of the research is that there was no direct knowledge of or interaction with individual students. Interviews with small sub-groups of students will help to support and validate the presence or lack of psychological safety within the online classroom. In addition, interviewing small subgroups of students, either individually or as a group, will garner further insight into the instructor's actions and the different design aspects that specifically make a difference. While the study provided some insight about what actions and designs helped create psychological safety, direct conversations will allow for a micro-assessment of what works.

## CONCLUSION

Psychological safety plays a role in students' performance and emotions toward the course. This finding may explain why Chu (2022) found that when most courses went online due to the pandemic, students performed and learned less, which is in direct conflict with the no significant difference findings that were prevalent up to this time. One can naturally assume that because of the feelings caused by the pandemic and the speed with which courses were put online, many classrooms lacked psychological safety.

While the study does not conclude that psychological safety is the primary component for creating high-performing teams as it is in the world of business (Clark, 2020; Duhigg, 2018; Edmonson,

2006), it does point to critical factors such as the increase of excitement and decrease of the feeling of sadness towards the course as well as a significant difference in the grade achievement. These factors suggest that psychological safety significantly undergirds the effectiveness of learning strategies and outcomes within the online classroom. The presence or lack of psychological safety gives credence as the underlying factor of why learning strategies do not consistently work across courses.

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## APPENDIX A

Table 2. Examples of instructor actions

Psychological Safety Stage	Instructor actions
Inclusion Safety	When learners enter their online classroom, they want to feel welcome and that they are part of the larger team. The learners also want to feel a connection with their instructor. Learners perform better when they believe that the instructor wants them to succeed and believes they can succeed. The environment created is welcoming. Instructors can accomplish this in many ways. Typical ways to develop this include writing a welcome email with a video before class starts. Clearly stating the intent of the class and expectations in a welcome announcement and simply saying something such as, “welcome, I am glad you are here.” Use the student’s first name in any written or video correspondence. Instructors clearly state their contact information, a cell phone to text is helpful.
Learner Safety	Learners are in the online classroom to learn. They want to feel able to ask questions, make some mistakes, and learn. The instructor can create this environment in numerous ways. The way assignments are planned and constructed plays a prominent role in this. Using low or no-stakes assignments at the beginning or throughout the class allows learners to make mistakes, learn from them, and recover. When instructors give examples of mistakes they made and how they recovered from them helps to create learner safety as well.
Contributor Safety	Learners expect to contribute work and artifacts to the classroom. How they contribute can give them the feeling of contributor safety. The low or no-stakes assignments or quizzes help build this psychological safety level. Other opportunities within the work and artifacts the learner submits exist. For example, scaffolded assignments with feedback at each level or assignments where students can resubmit if they choose help build contributor safety. The way instructors give feedback helps to create a level of contributor safety.
Challenger Safety	Challenger safety is achieved when learners feel safe to challenge and disagree. Intellectual friction is a hallmark of this stage. This can be achieved in the discussion forums by assigning some learners to be the devil’s advocate and purposefully bring alternative views to the discussion.

## APPENDIX B

Table 3. Independent Samples Test for GPA

		Independent Samples Test									
		Levene's Test for Equality of Variances		t-test for Equality of Means						95% Confidence Interval of the Difference	
		F	Sig.	t	df	Significance		Mean Difference	Std. Error Difference	Lower	Upper
						One-Sided p	Two-Sided p				
GPA	Equal variances assumed	17.911	<.001	6.816	55	<.001	<.001	.47201	.06925	.33323	.61079
	Equal variances not assumed			7.286	39.838	<.001	<.001	.47201	.06478	.34107	.60295

**APPENDIX C**

**Table 4. Independent Samples Effect Sizes**

<b>Independent Samples Effect Sizes</b>					
		Standardizer <sup>a</sup>	Point Estimate	95% Confidence Interval	
				Lower	Upper
GPA	Cohen's d	.26040	1.813	1.186	2.428
	Hedges' correction	.26402	1.788	1.169	2.395
	Glass's delta	.33304	1.417	.777	2.041

a. The denominator used in estimating the effect sizes.  
 Cohen's d uses the pooled standard deviation.  
 Hedges' correction uses the pooled standard deviation, plus a correction factor.  
 Glass's delta uses the sample standard deviation of the control group.

**APPENDIX D**

**Table 5. Independent Samples Test for Emotion**

		<b>Independent Samples Test</b>										
		Levene's Test for Equality of Variances			t-test for Equality of Means							
		F	Sig.	t	df	Significance		Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
						One-Sided p	Two-Sided p			Lower	Upper	
Sad	Equal variances assumed	2.732	.104	-3.473	55	<.001	.001	-.090	.026	-.142	-.038	
	Equal variances not assumed			-3.721	38.874	<.001	<.001	-.090	.024	-.139	-.041	
Bored	Equal variances assumed	.826	.367	-2.424	55	.009	.019	-.065	.027	-.118	-.011	
	Equal variances not assumed			-2.439	54.345	.009	.018	-.065	.027	-.118	-.012	
Happy	Equal variances assumed	1.713	.196	1.683	55	.049	.098	.032	.019	-.006	.071	
	Equal variances not assumed			1.720	54.744	.046	.091	.032	.019	-.005	.070	
Fear	Equal variances assumed	.033	.857	-1.302	55	.099	.198	-.025	.019	-.064	.014	
	Equal variances not assumed			-1.281	48.601	.103	.206	-.025	.020	-.065	.014	
Angry	Equal variances assumed	.807	.373	-1.361	55	.090	.179	-.026	.019	-.065	.012	
	Equal variances not assumed			-1.435	45.983	.079	.158	-.026	.018	-.063	.011	
Excited	Equal variances assumed	6.967	.011	6.039	55	<.001	<.001	.169	.028	.113	.225	
	Equal variances not assumed			5.695	33.626	<.001	<.001	.169	.030	.109	.229	

## APPENDIX E

Table 6. Independent Samples Effect Sizes for Emotions

Independent Samples Effect Sizes					
		Standardizer <sup>a</sup>	Point Estimate	95% Confidence Interval	
				Lower	Upper
Sad	Cohen's d	.097	-.924	-1.469	-.371
	Hedges' correction	.099	-.911	-1.449	-.366
	Glass's delta	.125	-.718	-1.264	-.161
Bored	Cohen's d	.100	-.644	-1.177	-.107
	Hedges' correction	.102	-.636	-1.160	-.105
	Glass's delta	.104	-.625	-1.165	-.076
Happy	Cohen's d	.072	.448	-.082	.973
	Hedges' correction	.073	.441	-.081	.960
	Glass's delta	.080	.406	-.129	.934
Fear	Cohen's d	.073	-.346	-.870	.180
	Hedges' correction	.074	-.342	-.858	.178
	Glass's delta	.067	-.381	-.908	.152
Angry	Cohen's d	.073	-.362	-.886	.165
	Hedges' correction	.074	-.357	-.874	.163
	Glass's delta	.090	-.295	-.819	.234
Excited	Cohen's d	.105	1.606	.999	2.202
	Hedges' correction	.107	1.584	.986	2.171
	Glass's delta	.064	2.654	1.798	3.493

a. The denominator used in estimating the effect sizes.

Cohen's d uses the pooled standard deviation.

Hedges' correction uses the pooled standard deviation, plus a correction factor.

Glass's delta uses the sample standard deviation of the control group.

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