AN UNCIVIL STUDENT AND AN ANTAGONISTIC PROFESSOR WALK INTO A CLASSROOM: HOW INSTRUCTOR BEHAVIOR DURING CLASS CONFLICT IMPACTS LEARNING

Caitlyn Nicole Carey, M.S.

Dissertation Prepared for the Degree of

DOCTOR OF PHILOSOPHY

UNIVERSITY OF NORTH TEXAS

December 2022

APPROVED:

Adriel Boals, Major Professor
Krisstal Clayton, Co-Major Professor
Robin Henson, Committee Member
Kimberly Kelly, Committee Member
Donald Dougherty, Chair of the Department of Psychology
James Meernik, Interim Executive Dean of the College of Liberal Arts and Social Sciences
Victor Prybutok, Dean of the Toulouse Graduate School

Carey, Caitlyn Nicole. *An Uncivil Student and an Antagonistic Professor Walk into a Classroom: How Instructor Behavior during Class Conflict Impacts Learning*. Doctor of Philosophy (Behavioral Science), December 2022, 61 pp., 7 tables, 1 figure, references, 87 titles.

Exceptional classroom management (CM) for face-to-face and online classes is vital to instructor success, and importantly, directly impacts students' ability to learn. Classroom conflict may disrupt an instructor's CM and can occur when a student is uncivil (e.g., sidetracks from lecture) or when an instructor misbehaves (e.g., antagonizes students). A small but meaningful line of work suggests that uncivil students and misbehaving teachers negatively impact the learning environment. However, no work has examined how the interaction between an uncivil student and misbehaving teacher impacts learning. As such, the purpose of the current study is to empirically investigate how teacher responses to student incivility impact cognitive learning in an online learning environment. The project evaluated approximately 252 undergraduate students via an online study. Participants watched a video of an online class in which the professor responds to an uncivil student in one of three different ways: antagonistically, positively, or neutrally. Participants then took a cognitive learning quiz based on the lecture and answered questions about their perception of the instructor, uncivil student, and the learning environment. Results of the one-way ANOVA suggest that how an instructor responded to student incivility did not significantly impact cognitive learning. Secondary analyses also indicated that participant perceptions of the instructor, uncivil student, and learning environment did not significantly relate to cognitive learning. Results of the current study evidence both convergence and divergence with prior work, highlighting the importance of continued experimental investigation of the impact instructor reactions to student incivilities has on learning.

ACKNOWLEDGEMENTS

I would first like to thank my graduate mentor Dr. Krisstal Clayton, whose mentorship and guidance has made me a better teacher, researcher, and mentor. Thank you for believing in me and for helping me believe in myself.

I would also like to thank my wife, Stephanie. I am so grateful for your years of support and encouragement. I could not have done this without you, thank you.

To Dr. Boals, thank you for taking me on as your graduate student and helping me throughout the dissertation process. Your guidance and mentorship helped me be a better researcher. I would also like to thank my committee members Dr. Kimberly Kelly and Dr. Robin Henson for their mentorship and support.

Maeve, you have been there for me through every high and low since we started this academic journey and our friendship will forever be cherished, thank you.

David Lee, thank you for always lending an ear and cheering me up when things got hard. You are one of my biggest supporters and I am so grateful for our friendship.

To Nathan, Ivan, Gigi, and the Behavioral Science students, thank you for believing in me and encouraging me throughout my various academic endeavors.

Baillee, your support throughout my entire life to pursue my goals and dreams has meant more to me than you could ever know, thank you.

Lastly, I would like to thank Dr. Marcel Kerr and Dr. Marilyn Pugh whose mentorship helped me find my passion for science.

TABLE OF CONTENTS

Page

LIST OF TABLES AND FIGURES

Page

Tables

Figures

CHAPTER 1

INTRODUCTION

It is estimated that 13,000 instructors teach Introduction to Psychology to approximately 1.2 – 1.6 million undergraduate students a year (Gurung et al., 2016). As such, excellent pedagogical skills – those that involve the ability to convey knowledge and skills in ways that students can intellectually engage, apply the course material to the world outside of the classroom, and cultivate a supportive learning environment – are of vital importance to college-level psychology instructors (Bhowmik et al., 2013). Since pedagogy is commonly described as "the art of teaching," instructors ought to know how their pedagogy (i.e., their approach to teaching) impacts and influences students. As such, some key components of excellent pedagogy skills are learning assessment processes and classroom management skills.

Since the purpose of teaching is to produce learning from students, how instructors assess learning is important (Bhowmik et al., 2013). Broadly, there are two types of learning assessments – summative and formative assessments. Summative assessments are defined as, "…a judgement which encapsulates all the evidence up to a given point" (Taras, 2005; p. 468). Summative assessments are often high-stakes cumulative assignments that evaluate student learning across various topics and concepts, such as final exams, term papers, and final projects (Boston, 2002). The goal of summative assessments is to evaluate student learning outcomes, knowledge, and retainment of information at the end of a learning unit (Dixson & Worrell, 2016; American Educational Research Association, American Psychological Association; the National Council on Measurement in Education; AERA, APA, & NCME, 2014). Summative assessments are commonly regarded as an assessment *of* learning, which can provide instructors with valuable data on their students' competency of learning objectives (Harlen et al., 2002).

Although a strength of summative assessments is that they allow instructors to gauge student learning and assess the effectiveness of their pedagogy, this information is only gleaned after there are no more opportunities for the student or instructor to improve during the learning unit (Garrison & Ehringhaus, 2018). As such, instructors should explore other assessment options that allow for real-time student and instructional adjustments.

One such assessment is formative assessment. Formative assessments are those that are brief, low/no-stakes assessments that are given before high-stakes assignments (e.g., exams), such as submitting rough drafts, lecture reviews, and chapter reviews (Boston, 2002; Ober et al., 2020). Commonly regarded as an assessment *for* learning, formative assessments allow students to get feedback from their instructor with enough time to make adjustments that will ensure their success in the course. For instance, work conducted by Smith (2007) found that students who engaged in formative assessments and integrated instructor feedback performed better on exams than those who did not. Importantly, formative assessments help instructors gain valuable information on student learning and simultaneously the effectiveness of their pedagogy. However, the process of formative assessments can be overwhelming for instructors, as it requires more time to give substantive feedback for each student's assignment/performance. Despite this weakness, the Society for the Teaching of Psychology, one of the leading organizations focused on the scholarship of teaching psychology courses, suggests that formative assessments are the best way to evaluate if student learning objectives are met (Ober et al., 2020). Combined, this area of work highlights the importance of the type of learning assessments used by instructors and demonstrates that careful consideration of implementing summative and formative assessments is an essential component of excellent pedagogy.

The second key component to excellent pedagogy is classroom management skills.

Classroom management (CM) is an integral component of the teaching and learning process in the college classroom. Wolff and colleagues (2015) describe CM as:

> A multi-faceted skill set encompassing the structure and atmosphere of the classroom space, the instructional choices of the teacher, the pedagogical and practical knowledge driving these decisions, and the stream of interaction and exchange occurring inside (and outside) the classroom (p.71).

The goal of effective CM is to create a positive classroom environment that has clear expectations, engages students, and promotes student learning and growth (Gaias et al., 2019). Importantly, effective teaching and student learning is reduced in poor CM settings (Jones & Jones, 2012; Korpershoek et al., 2016; Marzano et al., 2003). When effective CM strategies are implemented, positive student improvement is seen on outcomes such as academic achievement and social-emotional growth (Korpershoek et al., 2016). When CM strategies are ineffective, negative student outcomes such as low engagement and lower academic achievement are observed (Bohn et al., 2004).

One factor that can disrupt CM, thus negatively impact learning, is conflict in the classroom. The issue of CM in college classrooms has gained attention from several researchers. Since conflict in the classroom has been seen as a part of higher education since its beginnings (Holton, 1995), it is essential for educators and researchers to understand the impact students and instructors have on classroom conflict, and subsequently, learning. As such, the focus of this project is to empirically investigate instructor behavior towards college student incivility, and what effect this has on learning.

Student Incivility

One frequent classroom conflict is student incivility, defined as “any action that interferes with a harmonious and cooperative learning atmosphere in the classroom” (Feldmann, 2001, p. 137). From Feldmann’s (2001) original taxonomy, student incivility can be described as a

spectrum of behaviors categorized in the following ways: (1) annoyances, (2) classroom terrorism, (3) intimidation, and (4) threats. Annoyances are described as behaviors of poor etiquette (e.g., sleeping or daydreaming during class) and irritating behaviors (e.g., texting or having a phone go off during class, getting to class late/leaving early), and is the least extreme form of student incivility (Burke et al., 2014). Classroom terrorism describes those students whose goal is to "dominate class or instructor time with behaviors such as raising irrelevant topics (i.e., sidetracking) or displaying intolerance toward others' views" (Burke et al., 2014, p. 162). Intimidation behaviors are those that involve bullying or harassment, such as threating the professor with a bad course evaluation. Lastly, threats refer to explicit statements of possible violence against students and instructors and is the most extreme form of student incivility (Burke et al., 2014). Since these incivilities are defined as those that negatively impact learning, instructors ought to know the prevalence of student incivilities to better understand how they shape the classroom environment and learning overall (Feldmann, 2001).

A well-established line of work has investigated the prevalence of student incivilities in higher education. Royce (2000) found that over 80% of faculty surveyed stated that they had observed students portray 23 of the 30 listed uncivil student behaviors. More recently, work from Black and colleagues (2011) found that approximately 55% of faculty reported student incivilities in the classroom from slightly serious to extremely serious, and that these incivilities occurred anywhere from several times a semester to several times a week. Additionally, work from Lampman and colleagues (2009) found that 99% of faculty who identified as men and 96% of faculty who identified as women reported at least one student incivility. Combined, this work shows that student incivility is still a prevalent issue in higher education today. As such, to

prepare themselves, instructors would need to know what types of student incivilities are prevalent.

Current research suggests that annoyance is still the most common student incivility (Feldmann, 2001; Burke et al., 2014). Throughout this area of work, the most common types of student incivilities categorized as annoyance are when students are late to class/leave early, talk out of turn, are unprepared for class, sleep during class, and use their computer in a distracting way (Alberts et al., 2010; Bjorklund & Rehling, 2009). Although they are less common, the most frequently reported student incivilities that are moderately intense are disrespect towards the instructor and challenging and confronting the instructor during class (Alberts et al., 2010; Clark et al., 2010; Lampman et al., 2009). More intense student incivility behaviors such as threats are less common. However, work from Alberts and colleagues (2010) shows that only 21% of a sample of 397 faculty members had experienced hostile student behavior (e.g., threats) in their career. Combined, this area of work demonstrates a need to understand what types of classrooms student incivilities are seen.

Researchers have examined what types of classrooms student incivilities take place. Previous work suggests that the larger the class size, the higher incidence of student incivility (Swinney et al., 2010). For instance, work conducted by Alberts and colleagues (2010) found that courses with more than 50 students have more incidences of student incivility. Importantly, most work in this area has primarily evaluated face-to-face (F2F) learning environments.

According to Burke and colleagues (2014), three broad topics have been identified as *potential* causal factors of student incivility: (1) situational, (2) student-related, and (3) instructor-related causes. The main situational causes of student incivility are a lack of administration support for faculty, teaching evaluations make it less likely for instructors to

report student incivilities, and the timing during the academic term (Alberts et al., 2010; Burke et al., 2014). The primary student-related causes of student incivility are mental/emotional issues, propensity to use technology, narcissism, consumerism, and attitudinal gaps between students and instructors (Burke et al., 2014; Lampman et al., 2009; McKinne & Martin, 2010; Nordstrom et al., 2009). For instructor-related correlates of student incivility, the literature is mixed in terms of the impact of faculty attributes (e.g., demographics) and instructor experience in the classroom (e.g., novice vs senior faculty; Burke et al., 2014; Bell et al., 2010; Meyers et al., 2006). Importantly, all of these works are considered as *potential* causal factors because these studies implemented a correlational design. To the authors knowledge, no experimentally designed studies have explored the causal mechanisms of student incivilities. Although research shows that student incivilities, by definition, negatively impact learning, the lack of understanding into the causal mechanisms of student incivilities (e.g., instructor-related causes), warrants further investigation. Overall, many researchers have investigated the problem of student incivility in college classrooms, but the issue and impact of instructor behavior/reaction has not received as much attention.

Managing Student Incivility

When there is conflict in the classroom, such as student incivility, how the instructor responds may have significant impacts on the learning environment. Broadly, there are two main instructor strategies for positive student incivility management— prevention and reaction (Burke et al., 2014). Prevention strategies are those that faculty can implement to potentially lessen the occurrence of student incivility, such as being respectful to students, learning student names, and modeling the behaviors an instructor wants their students to exhibit (Alberts et al., 2010; Black et al., 2011; Nordstrom et al., 2009). Reaction strategies are the ways in which instructors react to

the student incivility when the incidence occurs. The most common reaction strategies that faculty report as an effective way of managing student incivility are respectful communication with the student, privately addressing the student incivility outside of class, and friendly verbal reminders of appropriate classroom behavior (Alberts et al., 2010; Burke et al., 2014; Meyers et al., 2006).

The majority of work focused on managing student incivilities have focused on the ways in which instructors can prevent student incivilities from happening, and the proper way to react to them when they do occur. For instance, work conducted by McKinne and Martin (2010) suggests that collaborating with students may be a better approach to handling student incivility, as opposed to confronting the student. Additionally, Alberts and colleagues (2010) suggest that a more personal response from the instructor regarding student incivility is the most effective way to manage. Although the majority of this area of work has investigated positive instructor management of student incivility, research focused on negative instructor reactions to student incivility is important area to address.

A small but meaningful line of work has investigated the effect of negative instructor responses to classroom conflict. For instance, previous works have Boice (1996; 2000) found that professors who seem uncaring and cold, are late to the course they teach, ignoring student questions/opinions, present material too quickly, and being unfair or rigid contribute to classroom conflict (e.g., student incivility; Boice, 1996; Boice, 2000; Clark & Springer, 2007). Additionally, Tantleff-Dunn and colleagues (2002) found that undergraduate students report dissatisfaction when professors respond to class conflict by acting defensively, retaliatory, attempt to humiliate students, or deny that there is a problem. Although negative reactions to student incivility are seen as dissatisfactory, some work suggests that there is not much

difference between an instructor who reacts poorly and a neutral instructor that does not respond to classroom conflict. More recent work conducted by Boysen (2012) suggests that students report instructors who ignore classroom conflict as an ineffective instructor. Further, Meyers and colleagues (2006) found that instructors reported ignoring classroom conflict as an unsuccessful classroom management strategy. Combined, these works demonstrate that instructors who ineffectively respond to classroom conflict negatively impact students. However, the majority of this aforementioned work has assessed the management of student incivilities and classroom conflict in F2F learning environments.

Teacher Misbehaviors

One potential factor related to an instructor's reaction to and management of student incivilities are teacher misbehaviors. Kearney and colleagues (1991) defined teacher misbehaviors as "those teacher behaviors that interfere with instruction and thus, learning" (p. 310). Kearney and colleagues (1991) identified three main teacher misbehaviors: (1) incompetence, (2) indolence, and (3) offensive behaviors. Incompetent behaviors are those that demonstrate ineffective teaching skills, such as not caring about the course or their students, failing to learn their students' names, refusing to review for exams, and disallowing student input during class. Indolent behaviors are those that demonstrate a lack of procedural skills, such as failing to show up for class, being late to class, and providing poor excuses for their absenteeism. Lastly, offensive behaviors are those that demonstrate ineffective communication skills, such as humiliating students in front of the class, becoming angry or yelling at students, and acting rude, self-centered, and moody.

Since this work is fairly dated (approximately 30 years), a recent replication and extension of Kearney and colleagues' (1991) foundational work conducted by Goodboy and

Myers (2015) found three main teacher misbehaviors: (1) antagonism, (2) lectures (e.g., lecture-style), and (3) articulation. First, antagonism refers to teacher behaviors related to putdowns, aggression, professionalism, and favoritism/prejudice towards students. Second, lectures refer to teacher behaviors related to boring lectures, overloading information, and confusing/unclear teaching. Lastly, articulation refers to teacher behaviors related to foreign/regional accents. Importantly, teacher misbehaviors have been associated with a variety of negative student outcomes (e.g., communication, participation, learning; Broeckelmen-Post et al., 2016; Goodboy & Bolkan, 2009; Goodboy et al., 2010). Given these links, investigation into teacher misbehaviors and its impact on students warrants further investigation.

How an instructor communicates with their students can influence how the classroom is perceived and can be a determining factor in a student's choice to participate or communicate with their instructor (Myers et al., 2002). One factor that can disallow for the successful communication between students and their instructor is teacher misbehaviors. Work conducted by Goodboy and colleagues (2010) found that undergraduate students who reported their instructor misbehaviors as being offensive, indolent, or incompetent were unmotivated to communicate with their professor for functional reasons (e.g., to ask questions about the material). Goodboy and colleagues (2010) also found that undergraduate students who reported incompetence as their instructor's misbehavior were unmotivated to communicate with their instructor for relational (e.g., to learn more about the teacher personally), participatory (e.g., to demonstrate intelligence), and sycophantic (e.g., to get on the instructor's good side) reasons. Similarly, previous research has also found that teacher misbehaviors such as antagonism and lectures (e.g., lecture-style) are negatively related to undergraduate student communication satisfaction with their instructor (Goodboy & Myers, 2015).

Previous researchers have established that not only do teacher misbehaviors negatively impact communication between students and instructors, but they can also promote destructive communication from students. For instance, Claus and colleagues (2012) found that teacher misbehaviors were associated with an increased likelihood of students communicating antisocial behavioral altercation techniques, which are those meant to punish the instructor, undermine the instructor's authority, and threaten the instructor (Golish & Olsen, 2000; Kearney et al., 1984). Combined, these works establish a negative association between teacher misbehaviors and productive student-instructor communication, an integral component of student learning and success in the classroom. As such, the ways in which teacher misbehaviors impact undergraduate students is an important area for researchers to investigate.

Researchers have examined the impact of teacher misbehaviors on various aspects of student engagement. One component of student engagement is participation in the classroom. Previous work states that student participation can be dependent on the student's perception of how supportive and approachable their instructor is (Fassinger, 2000). Importantly, teacher misbehaviors may suppress student classroom participation, thus negatively impacting student engagement. For example, findings from Goodboy and Bolkan (2009) suggest that teacher misbehaviors may produce a classroom environment that students perceive as unsupportive, thus discouraging them to participate in class. Another component of student engagement related to participation is motivation, which may be changed by teacher misbehaviors. For instance, work conducted by Baker and Goodboy (2018) found that teacher misbehaviors such as antagonism and lectures were negatively associated with student's intrinsic motivation to learn, suggesting that students lack motivation to learn when they have a misbehaving teacher. Lastly, research by Broeckelman-Post and colleagues (2016) found that there is a strong negative relationship

between teacher misbehavior and student interest and engagement, such that teacher misbehaviors result in lower student interest and engagement. Together, these works suggest that teacher misbehaviors seem to have a negative impact on student engagement, particularly on student participation, motivation, and interest.

Researchers have sought to identify the impact of teacher misbehavior on learning. Work conducted by Vallade (2020) found that students reported teaching wrong information, teaching confusingly, and administering tests that are disconnected from the lecture as the most negatively impactful teacher misbehaviors on their learning. Similarly, Goodboy and Myers (2015) found that antagonism and lecture teacher misbehaviors were negatively correlated with student perceived cognitive learning. Additionally, Goodboy and Bolkan (2009) found that teacher misbehaviors negatively impact learning outcomes, particularly affective learning (e.g., student feelings, emotions, and acceptance toward subject matter; Krathwohl et al., 1964). Lastly, Sidelinger and Bolen (2015) found that teacher misbehavior, specifically teachers who behave in compulsive communication (e.g., teachers who overcommunicate), is negatively associated with affective learning. Together, this work suggests that there is a negative association between teacher misbehavior and learning outcomes. However, little to no work that has evaluated this relationship experimentally with random assignment.

To the authors knowledge, only one work has evaluated the relationship between teacher misbehavior and student learning experimentally with random assignment. Goodboy and colleagues (2018) randomly assigned 427 undergraduate students (~75% women; *Mage* = 20.04) to watch a video with either an antagonistic instructor (manipulation group) or without an antagonistic instructor (control group). Participants in both conditions were given the same information in the lecture videos, asked to answer questions about their perception of the lecture

videos, and then take a 10-question quiz on the lecture video. Overall, Goodboy and colleagues (2018) found that students randomly assigned to the antagonistic instructor condition performed *slightly* worse (approximately 5%) on the 10-question quiz compared to the group that was randomly assigned to not have an antagonistic instructor, and that the effect of antagonism on quiz score was mediated by student affect towards the content. Importantly, without the comparison of a third group, one where the teacher has *positive* interactions with students (e.g., does not antagonize, facilitates teacher-student rapport) *and* exhibits good classroom management, it could be that a larger effect was not seen because students may perceive a neutral teacher similarly as an antagonistic teacher in their reaction to student incivilities (Boysen, 2012). As such, future researchers should evaluate what different learning outcomes, if any, can be seen when comparing positive, antagonistic, and neutral teachers. Overall, this area of work combined with literature on student incivilities suggests a need for understanding the relationship between instructor behaviors and student incivilities, and what impact this relationship has on learning.

A major limitation of previous works focused on teacher misbehaviors is the lack of experimental studies. Only one article (Goodboy et al., 2018) has utilized an experimental design to assess teacher misbehaviors. In fact, the vast majority of works are correlational designed studies (e.g., Boysen, 2012; Sidelinger & Bolen, 2015; Vallade, 2020), some of which have been utilized to predict the impact of teacher misbehaviors (e.g., Broeckleman-Post et al., 2016). The use of correlational designed studies ultimately disallows for causal inferences to be made regarding the nature of teacher misbehaviors and its impact on learning. Experimental studies can move the science forward by establishing what causal connection, if any, can be found between teacher misbehaviors and learning. A better understanding of the causal mechanisms

related to teacher misbehaviors and learning is a worthy research endeavor as it would aid instructors in improving their pedagogy and ensure student success in their courses.

Online Classrooms

One mechanism that should be considered in understanding student incivility and the impact of teacher misbehaviors is the environment of the course classroom. How a course is delivered is a major component of planning effective pedagogical methods and ensuring student learning. Current research suggests that online education has been steadily increasing over time, with 6.3 million college students (approximately 31.6% of all students in the U.S.) taking at least one online course (Seaman et al., 2018). Interestingly, while higher education enrollment overall has steadily *decreased* in the past decade, online enrollment has steadily *increased* (Seaman et al., 2018). Given that researchers have predicted online education to be an essential tool for the future of higher education for over a decade (e.g., Allen & Seaman, 2010), instructors ought to know if online courses can give the same learning outcomes and opportunities as F2F courses, unique challenges related to online teaching, and the advantages and disadvantages of online teaching.

Several works support (Al-Azawei & Lundqvist, 2015; Chen & Chiou, 2014; Kushnir & Berry, 2014) and refute (Helms, 2014; Scherrer, 2011; Wolff et al., 2014) the notion that there are no differences in the quality of learning opportunities between online and F2F courses. For example, Kemp and Grieve (2014) found that there were no significant test performance differences between psychology students who completed their course activities online versus those who completed the activities F2F. Conversely, Xu and Jaggars (2014) examined the performance gaps between online and F2F courses by discipline, and found that the social sciences (e.g., psychology, sociology, and anthropology) had significant performance gaps

between online and F2F courses compared to other disciplines (e.g., math, English, and natural sciences). Overall, meta-analyses focused on the efficacy of online versus F2F courses show that there is no clear distinction on which type of course produces better learning outcomes (Driscoll et al., 2012; Jahng et al., 2007). These findings, along with the increasingly popular utilization of online course by universities (e.g., Palvia et al., 2018), suggests that instructors would benefit from understanding the challenges of teaching online courses.

From Kebritchi and colleagues' (2017) meta-analysis, three main categories of online teaching challenges have been found: (1) learner issues, (2) instructor issues, and content development issues. Learner issues are those such as, "…expectations, readiness, identity, and participation in online courses" (Kebritchi et al., 2017, p. 21). For expectation issues, students in an online course may have inappropriate expectations of instructors in terms of grading/giving feedback quickly that are not realistic for faculty to implement (Li & Irby, 2008; Lyons, 2004). For readiness issues, students may not possess the level of self-directed learning skills or self-motivation to succeed in online courses (Hung et al., 2010; Kebritchi et al., 2017). For identity issues, students who have a lack of social support and community within their online course may feel disconnected and disinhibit learning (McInnery & Roberts, 2004). Lastly, issues with participation include level of student engagement in the online learning environment (Wise et al., 2013).

Instructor issues are those that relate to, "…changing faculty roles, transition from F2F to online, faculty time management, and teaching styles" (Kebritchi et al., 2017, p. 14). Issues related to changing faculty roles refer to the transition from leading lectures to facilitating student learning (Kebritchi et al., 2017). Issues related to the transition from F2F to online teaching is the lack of training faculty receive in teaching online, lack of expectations for

teaching an online course (from the instructor's institution), and a lack of feedback to improve instructor online pedagogy (Allen & Seaman, 2011; Kebritchi et al., 2017). Issues related to faculty time management include the number of hours it takes to prepare and teach an online course, which several studies have found to be twice as much time to prep/teach an online course as it would a F2F course (Cavanaugh, 2005; Kyei-Blankson & Keengwe, 2013). Lastly, issues related to teaching styles include challenges with implementing effective pedagogy in online courses (Kebritchi et al., 2017).

The last online teaching related challenge is issues relating to content, including content development, incorporating multimedia content, and the role of instructional strategies in content development (Kebritchi et al., 2017, p.11). Content development issues are related to the challenge of adjusting an instructor's pedagogical techniques from F2F to an online course format (Kebritchi et al., 2017; Li & Irby, 2008). Issues related to the integration of multimedia in content are related to the challenging of choosing multimedia that enhances learning (Yue et al., 2013). Lastly, instructional strategies in content development include the challenges of creating a leaner-centered course that contains collaborative activities, student reflection activities, clear assessment for students to follow, and an appropriate integration of technology, all in an online context (Kebritchi et al., 2017; Niess & Gillow-Wiles, 2013). Combined, Kebritchi and colleagues' (2017) meta-analysis highlights the unique challenges related to online teaching and prompts an important consideration of the advantages and disadvantages of online courses for instructors.

Previous works have investigated instructor perceptions of the advantages and disadvantages related to online courses. Dumont and Raggo's (2018) recent work found that faculty reported that working remotely, flexibility in their work schedule, and ability to innovate

course design/delivery as the biggest advantages of teaching online courses. Earlier works in this area support these findings. For example, Shea (2007) found that from faculty across 36 different colleges in the U.S., the top faculty-reported advantages of teaching online courses were having a flexible work schedule and the opportunity to try new pedagogical techniques. Additionally, Dumont and Raggo (2018) found that faculty reported less opportunities to engage with students, time commitment, and the designing of an online course as disadvantages of online teaching. Similarly, Shea (2007) found that faculty commonly reported concerns for student access, time commitment, and inadequate compensation as disadvantages of online teaching. Combined, these works suggest that an understanding of the advantages and disadvantages of online course instruction could aid instructors in what to expect when teaching an online course. Overall, previous works focused on online teaching, in relation to the prediction of online courses being an important tool for higher education in the future (Allen & Seaman, 2010), suggests that instructors need to know the various aspects of online teaching to ensure effective pedagogy.

As previously discussed, a key component of effective pedagogy is managing student incivilities. However, do we see differences in student incivilities in an online context? Current research on the topic suggests that we do. Galbraith and Jones (2010) found that the most common types of student incivilities in online courses are demanding special treatment (i.e., deadline extensions), missing a deadline with no explanation, and expressing an “I paid for this” attitude in an assertive and disrespectful way to the instructor. Work conducted by Martin and Olsen (2011) highlights the impact student incivility (e.g., cyberbullying) can have on instructor reputation through websites such as ratemyprofessor.com.

Currently, there is limited work focused on online academic incivility. Campbell and colleagues (2020) define it as “any discourteous verbal or nonverbal behaviors directed toward

others, such as instructors, students, or observers that disrupts the online learning environment" (p. 110). Some examples of online academic incivility are when someone (teacher or student) is offensive, fails to respond, attempts to embarrass others, and disseminates inappropriate messages about someone in a public setting (Clark et al., 2012; Coe et al., 2014; Rafferty & Vander Ven, 2014; Watts et al., 2017). Online academic incivility has the potential to disrupt learning and student performance, resulting in students having lower academic achievement (e.g., grade point average; Lasiter et al., 2012), as well as a negative impact on instructors, such as instructor performance and faculty retention (Anderson et al., 2011; Anderson et al., 2013; Wright

Hill, 2015). Collectively, this area of work suggests a need for the investigation of online academic incivility management, and the impact this has on learning. Importantly, no work to the authors knowledge has randomly assigned university students to independent treatments for the purposes of investigating the impact of negative instructor reactions to a student incivility on learning. As such, a study that implements an experimental design would allow for a better understanding of what causal impacts, if any, negative instructor reactions have on student learning in an online environment.

Current Study

Combined, previous research publications highlight several limitations and future directions for classroom management, student incivilities, teacher misbehaviors, and how these interactions impact the classroom environment. Importantly, a major limitation of these works is the lack of diversity among samples, disallowing for generalizability. Specifically, Goodboy and Myers' (2015) study that replicated and extended Kearney's (1991) original definition of teacher misbehaviors did not report participant's race/ethnicity. As such, it is impossible to state what

racial/ethnic differences, if any, are found in undergraduate students' reporting of what they perceive as teacher misbehaviors. This is particularly concerning given that one of Goodboy and Myers (2015) subscales is articulation, with the following items: "speaks English very well," "speaks in a strong accent," and "has problems with pronunciation or articulation due to accent." Since this is a subscale of the most up-to-date definition and measure of teacher misbehaviors, it stands to reason that this measure sets a standard that is intrinsically biased against diverse faculty. As such, future research is needed on diverse faculty and undergraduate students to better understand what constitutes as a teacher misbehavior and what racial/ethnic differences, if any, can be seen.

Another limitation of this area of work is that no studies specifically state if their participants are neurotypical. The majority of these works seem to imply a "neurologically normal" student or faculty member - that is, an average student or faculty member that is considered standard or typical. It seems as though some of the standards that constitute a student incivility (e.g., annoyances) and teacher misbehavior (e.g., overly communicative) may regard students or faculty members on the autism spectrum as uncivil or misbehaving. As such, future research should at minimum record and report if their participants are neurotypical. Importantly, future research should also investigate student incivility, teacher misbehaviors, and managing classroom conflict among students and faculty who are neurodiverse.

Lastly, these research studies have primarily assessed for student incivility, teacher misbehaviors, and conflict management in the classroom via surveys with students who self-select their course, thus implementing correlational designed projects which disallow for experimental manipulations. Although correlational designed studies allow for predictions to be made, no causal inferences can be made regarding the impact of student incivility, teacher

misbehaviors, and classroom conflict management has on learning. As previously mentioned, only one study has explored the impact of teacher misbehaviors on learning (Goodboy et al., 2018), disallowing for a better understanding of what causal impacts teacher misbehaviors and reactions to student incivility have on learning. Combined, these works highlight the need for future researchers to implement experimental methodologies (e.g., a true experimental design with random assignment and a control group) to better identify what causal relationships, if any, can be found among these variables. Additionally, the vast majority of these studies have examined classes that meet F2F, with little to no works focused on online classrooms. Since 21st-century higher education is heading towards online learning (Seaman et al., 2018), with over 89% of universities offering online courses (Parker et al., 2011), more work focused on online classroom environments is needed to better understand student incivilities, teacher misbehaviors, and managing online classroom conflict. Once researchers have a better understanding of how these variables relate to one another, instructors can implement appropriate pedagogical techniques to ensure student learning and success.

The purpose of the current study is to empirically investigate how teacher responses to student incivility impact cognitive learning in an online learning environment. As previously mentioned, work by Goodboy and colleagues (2018) found a small but meaningful difference in learning outcomes, such that participants who were assigned an antagonizing teacher had significantly worse learning outcomes than those who were assigned a neutral teacher. Additionally, research suggests that having good classroom management (e.g., responding to a student incivility positively) can help students achieve academic success (e.g., Korpershoek et al., 2016). Lastly, previous works imply that students have the same regard for neutral teachers as they do antagonistic teachers (e.g., Boysen et al., 2012). Given these works, the current study

will assess the impact teacher responses to student incivility has on an online learning environment in two studies: Study 1 and Study 2.

CHAPTER 2

STUDY 1

Study 1 was conducted as a pilot study for Study 2. Specifically, Study 1 assessed the efficacy of (1) the three simulated online lecture videos, and (2) the 50-question cognitive learning quiz. The purpose of Study 1 was to ensure that the lecture videos were perceived by participants appropriately (e.g., participants indicating that an antagonistic professor was antagonistic), as well as helped to identify what questions should be kept in the cognitive learning quiz for Study 2.

Method

Participants

Study 1 included 131 undergraduate students enrolled at the University of North Texas (UNT) aged 18-54 years (*Mage* = 21.41, *SD* = 4.66; 65.4% women). Overall, the sociodemographic makeup of the Study 1 sample was representative of UNT's student population. Participants for Study 1 were recruited via UNT's SONA undergraduate research system and compensated two SONA research credits upon completion of the study. Inclusion criteria for the study was that participants were (1) 18 years of age or older, and (2) gave consent to participate. See Table 1 for the Study 1 sample sociodemographic information.

Table 1

Study 1 Sociodemographics (%)

	Full Sample *N* = 131	Antagonism *n* = 45	Positive *n* = 41	Neutral *n* = 45
Race/Ethnicity				
Latinx/Hispanic	27.1	22.2	35.0	25.0
European/White	20.2	13.3	22.5	25.0

(table continues)

	Full Sample *N* = 131	Antagonism *n* = 45	Positive *n* = 41	Neutral *n* = 45
African American	12.4	22.2	7.5	6.8
Asian	14.0	11.1	15.0	15.9
Other	16.3	22.2	12.5	13.6
Multi-racial/ethnic	10.1	8.9	7.5	13.6
Year				
Freshman	22.3	31.3	20.0	15.6
Sophomore	28.5	33.3	30.0	22.2
Junior	25.4	15.6	27.5	33.3
Senior	23.8	20.0	22.5	28.9
Major				
Psychology	22.3	31.1	20.0	15.6
Biology	28.5	33.3	30.0	22.2
Criminal Justice	25.4	15.6	27.5	33.3
English	23.8	20.0	22.5	28.9
Gender				
Woman	65.4	71.1	57.5	66.7
Man	30.3	26.7	37.5	26.1
Nonbinary	3.1	0.0	2.5	6.7
Transman	1.5	2.2	2.5	0.0
Neurodiverse (Yes)	26.2	26.7	26.8	25.0
Accommodations				
Yes	8.8	16.7	0.0	9.1
Sometimes	17.6	25.0	18.2	9.1
Age *M*(*SD*)	21.41 (4.66)	20.20 (2.34)	20.78 (2.64)	23.20 (6.86)

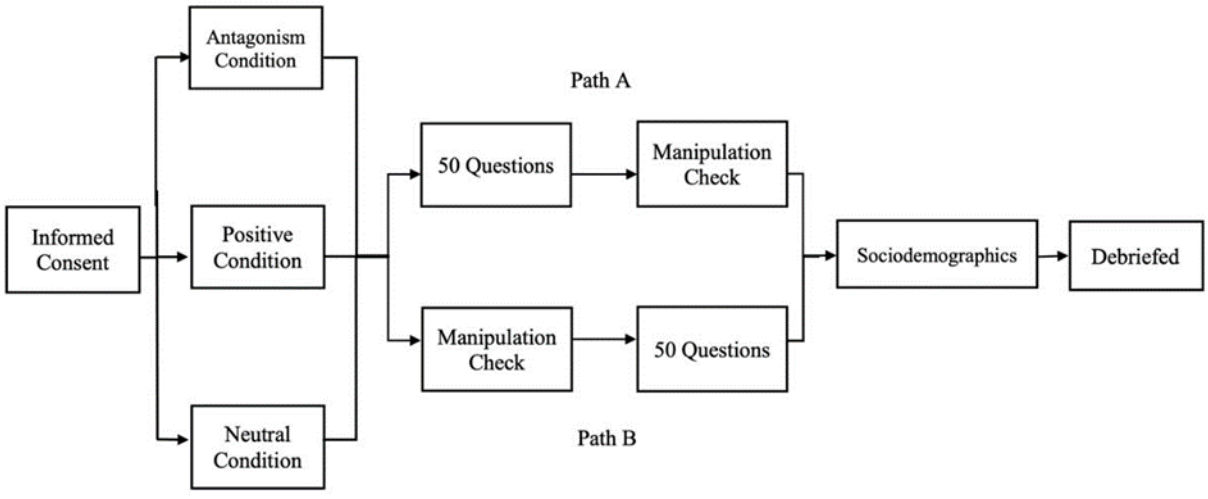
Procedure

At the beginning of the semester, undergraduate students enrolled at UNT were able to participate in the pilot study online via UNT's SONA extra credit system and the Qualtrics survey system. First, participants were presented with consent forms approved by UNT's IRB. Second, participants were randomly assigned to either the antagonism, positive, or neutral condition. Importantly, the survey was programmed to disallow students from moving on from

the video until the video was completed in its entirety. For example, the positive condition video was 5 minutes and 45 seconds long, so participants were not shown a “next” button until 5 minutes and 45 seconds had passed since they hit the “play” button. When prompted to watch the video, participants were told not to take notes, and that they’d be quizzed on actions/content once the video was over. Immediately after the video, a counterbalanced design was implemented to randomly assign students to either first answer 50 questions about the lecture content (i.e., the cognitive learning quiz) and then answer 10 questions about their perception of the instructor and uncivil student, or vice versa. Additionally, the 50-item cognitive learning quiz questions were randomized to account for any potential ordering effects. Lastly, participants were asked to answer sociodemographic questions (e.g., race/ethnicity, gender, year in school), debriefed, and thanked for participation. Study 1 took approximately 45 minutes, and upon completion of the study participants were granted 2 research credits. See Figure 1 for the Study 1 methodological design.

Figure 1

Methodological Design



Note. First, participants were randomly assigned to one of the three conditions (i.e., antagonism, positive, or neutral). Then, participants were then randomly assigned to either Path A or Path B.

Measures

Lecture Videos

Three simulated online classroom environments were created, with all confederates and the teacher having their cameras on. Each video contained the following: six confederates acting as students, one confederate acting as the uncivil student, and one instructor. A confederate committed the exact same student incivility in all three videos, and these incivilities were based on previous works (e.g., Campbell et al., 2020). Specifically, the student incivilities that were utilized in the study were annoyances, such as being unprepared for class, talking out of turn, being distracting, and having their phone go off. These incivilities were chosen because they are reported as the most common incivilities that occur in the classroom (Feldmann, 2001; Burke et al., 2014).

The lecture material was the exact same in every condition and was focused on Franz Mesmer, a lesser-known psychologist to account for participant's knowledge of the topic. The manipulation for each video was how the instructor responded to the student incivility. In Video 1 (i.e., antagonism condition video), the instructor responded to the student incivility with a teacher misbehavior (e.g., belittling or yelling at the student; Goodboy & Myers, 2015). In Video 2 (i.e., positive condition video), the instructor responded to the student incivility in a positive and appropriate manner (e.g., addressing the student by their name and calmly reminding them of class rules; Alberts et al., 2010). In Video 3 (i.e., neutral condition video), the instructor responded neutrally to the student incivility (e.g., not responding to the student incivility; Boysen, 2012). The antagonism condition video lasted 6 min and 16 s, the positive condition video lasted 5 min 45 s, and the neutral condition video lasted 5 min and 3 s. Importantly, the student incivility lasted approximately 5-10 seconds and the instructor response lasted

approximately 15-20 seconds in each video to ensure standardization across groups. However, the neutral condition video was about 50 seconds shorter than the antagonism and positive condition videos due to the nature of ignoring a student incivility (e.g., Boysen, 2012; Goodboy et al., 2018). Lastly, participants were able to rewind, pause, and fast forward the lecture, just as they would be able to in an online classroom that utilized recorded lectures.

Instructor Misbehavior Scale-Antagonism Subscale

The Instructor Misbehavior Scale-Antagonism Subscale (IMS-Antagonism) was used to assess instructor misbehaviors (Goodboy & Myers, 2015). Specifically, Study 1 used the 8-item antagonism subscale as a manipulation check for the lecture videos and has excellent reliability (α = .91 from Goodboy et al., 2015). Items are on a Likert scale ranging from 0 (*never*) to 4 (*very often*), with items such as "The instructor belittles students," and "The instructor criticizes students' responses to instructor comments or questions." In addition to the IMS-Antagonism subscale, face-valid questions were given as a manipulation check to assess participants perception of the instructor and the uncivil student. The internal validity of these items in the current study was α = .952.

Cognitive Learning Quiz

To measure cognitive learning, a 50-item multiple choice quiz was given to participants to assess their learning of the material covered in the lecture video. This quiz included questions such as, "Who was the lecture you watched about?" and "What was Franz Mesmer known for?" These questions were based on the material covered in the lecture video, and each question had 4 response options. The internal validity of these items in the current study was α = .864.

Demographics

Participant demographics (e.g., age, race, year in school) were assessed via face-valid questions. Additionally, a neurodiversity face-valid question asked participants to indicate if they are neurodiverse (i.e., "yes" or "no") and how they are neurodiverse (e.g., Autism, Attention Deficit Disorder, etc.) to assess the limitation of previous works (see Goodboy et al., 2018).

Analytic Approach

The Study 1 data was analyzed for missing data, and cases with properties of bad data were identified. Specifically, participants were not included in final analyses if they did any of the following: (1) did not answer question 1 correctly (*"Who was the lecture about?"*), (2) finished the study in less than 10 minutes, (3) finished the study in over 2 hours, (4) answered the same answer choice for each question (i.e., straight lining behavior), or (5) had any missing data on key variables of interest (i.e., manipulation check questions and the 50-question cognitive learning quiz).

The manipulation check questions were assessed via total scores on the IMS-Antagonism subscale, and a one-way analysis of variance (ANOVA) was conducted to assess differences of IMS-Antagonism total scores across condition. Additionally, a chi-square test was conducted to see if there were any differences between video condition and participant perception of the uncivil student. An item analysis was conducted to evaluate the quality of the 49-item cognitive learning quiz questions. The corrected item-to-total correlation coefficient was assessed to evaluate how any one-item was correlated to the total score. Items that had a low item-to-total correlation and increased the overall Cronbach's α when deleted were removed incrementally until the Cronbach's α could not be improved.

Results

Overall, the mean total quiz score on the cognitive learning quiz was 63.15 (*SD* = 16.34), and the distribution for each video was as follows: antagonism condition video (*n* = 45, *M* = 63.96, *SD* = 16.25), positive condition video (*n* = 41, *M* = 59.41, *SD* = 15.13), and neutral condition video (*n* = 45, *M* = 65.73, *SD* = 17.20). For teacher perception, results of the one-way ANOVA suggest that there were statistically significant differences between video condition and teacher perception, $F(2,128) = 21.80$, $p < .001$, $\eta p^2 = .34$, such that the antagonism condition teacher was perceived statistically significantly different from both the positive ($p < .001$) and neutral ($p < .001$) condition teachers. Specifically, the antagonism condition had the highest mean IMS-Antagonism score (*M* = 2.57, *SD* = 1.26), followed by the neutral condition (*M* =1.16, *SD* = 1.15) and the positive condition (*M* = 1.05, *SD* = 1.21).

Table 2

Study 1 Teacher and Student Perception Frequencies/Descriptives (%)

	Antagonism Condition	Positive Condition	Neutral Condition
Instructor Perception			
Antagonistic	88.9	36.6	46.7
Positive	3.0	22.0	6.7
Neutral	2.0	41.5	46.7
Uncivil Student Perception			
Disruptive/Uncivil	31.3	39.0	37.8
Engaged	46.7	41.5	42.2
Neutral	22.2	19.5	20.0
Instructor Antagonism Score	2.57 (1.26)	1.05 (1.21)	1.16 (1.15)

Note: Antagonism subscale from 0 (Never) – 4 (Very often), means and standard deviations are shown.

Interestingly, there was not a statistically significant difference of teacher perception between the positive and neutral conditions ($p = .912$). For participant perceptions of the student, results of

the chi-square test suggests that there were no statistically significant differences between video condition and perception of the uncivil student $\chi^2(4,131) = .692$, $p = .952$. The results suggest that the majority of participants reported the uncivil student as "engaged". See Table 2 for all responses.

The original cognitive learning quiz contained 50 items. Since Question 1 was used as a data quality check and participants were only included in final analyses if they answered that question correctly, it was not included in the item analysis. The original item analysis with 49 items had an initial Cronbach's $\alpha = .864$. As previously mentioned, items that had a low item-to-total correlation and increased the overall Cronbach's α when deleted were removed incrementally until the Cronbach's α could not be improved. The final number of items kept were 40 items, and the overall Cronbach's $\alpha = 0.887$. See Table 3 for the final item analysis results.

Table 3

Study 1 Item Analysis Results

Question	Item-to-total correlation	α if deleted
2.What was Franz Mesmer interested in?	0.348	0.885
3. What was Franz Mesmer's theory about the fundamental nature of life called?	0.359	0.885
4. What is animal magnetism?	0.344	0.885
5. What were the early techniques of animal magnetism?	0.423	0.884
6. Franz Mesmer would have his patients swallow ____ before performing animal magnetism on them.	0.453	0.883
7. After the patients would swallow iron fillings, Franz Mesmer would wave ___ around the patient.	0.464	0.883
8. Eventually, Franz Mesmer would use his ___ or other objects to wave around his patient.	0.250	0.886

(table continues)

Question	Item-to-total correlation	α if deleted
9. Franz Mesmer would perform _____ on his patients, where he would use his hands or other objects to wave around his patients.	0.369	0.884
10. Once Franz Mesmer would perform passes, his patient would first undergo a___state.	0.490	0.883
11. After the patient would go into a trance-like state, they would then undergo a _____ state.	0.395	0.884
13. Why was the Royal Commission created?	0.392	0.884
14. What is a Royal Commission?	0.224	0.887
15. Who was on the Royal Commission?	0.398	0.884
16. Who was the head of the Royal Commission?	0.452	0.883
18. What was Jean-Sylvain Bailly?	0.189	0.887
19. What was Joseph-Ignace Guillotin?	0.198	0.887
20. How many hypotheses did the Royal Commission have about animal magnetism?	0.506	0.882
21. What was the Royal Commission's first hypothesis?	0.284	0.886
23. How many trials did the Royal Commission use to test their hypotheses?	0.374	0.884
25. What was Trial 1 known as?	0.304	0.886
26. What occurred in Trial 2?	0.363	0.885
27. What was Trial 2 known as?	0.308	0.886
28. What were the results of the Royal Commission's investigation?	0.402	0.884
29. What did the Royal Commission call animal magnetism by itself?	0.412	0.884
30. How many copies of the Royal Commission's report were disseminated?	0.458	0.883
32. How did the Royal Commission's report shift the views of animal magnetism?	0.521	0.882
33. The Royal Commission's investigation was foundational for our understanding of ___.	0.295	0.886
34. The Royal Commission's report demonstrated the importance of _____.	0.500	0.882
35. The Royal Commission's report helped us to better understand the power of ____.	0.479	0.883
38. What did Mesmer believe was an imperceptible magnetic fluid that pervaded the universe?	0.401	0.884

(table continues)

Question	Item-to-total correlation	α if deleted
39. What did Mesmer believe was the cause of most diseases?	0.537	0.882
42. What did Mesmer claim to hold?	0.387	0.884
43. Mesmer claim that he could cure almost any illness using only his ____.	0.480	0.883
44. What would happen when a patient would be in a crisis state?	0.338	0.885
45. After all the flow-inducing activity, Mesmer believed that the patient would be ___.	0.420	0.884
46. Mesmer was interested in the interaction between natural energies in the universe, like ___, and the human body.	0.463	0.883
47. Animal Magnetism, as Mesmer believed, was an ____ magnetic fluid that pervaded the universe.	0.414	0.884
48. Did Mesmer always require patients to swallow iron fillings?	0.312	0.886
49. A royal commission is an investigation, _____, into a matter of great importance.	0.247	0.887
50. Mesmer believed that most disease were cause due to an abnormal flow of ____ inside the body.	0.492	0.882

Note. α = Cronbach's alpha.

CHAPTER 3

STUDY 2

Results from Study 1 suggest that the manipulation (i.e., the simulated online lecture videos) was successful. Consistent with previous literature (Boysen et al., 2012), participants in the antagonistic condition reported the teacher as antagonistic, and participants in the neutral condition reported the instructor equally as 'neutral' as they did 'antagonistic' (see Table 2). Interestingly, participants reported the teacher in the positive condition as 'neutral.' Further, results from the 49-item item analysis from Study 1 suggest that the cognitive learning quiz had acceptable reliability (Cronbach's $\alpha = 0.864$). Since there was not a meaningful difference in reliability between the 49-item quiz and the 40-item quiz (Cronbach's $\alpha = 0.887$), all 49 items were kept for Study 2. Given that the findings of Study 1 were contradictory to previously published works and no study has ever been conducted like the current project in a controlled online environment, Study 2 was developed to provide a replication of Study 1 for two reasons: (1) to make sure Study 1 findings were replicable, and (2) to increase the n-sizes for each video condition group. Importantly, a record of participants from Study 1 and Study 2 was kept to ensure that the two datasets were not significantly different from one another before combining them. The primary hypotheses for Study 2 are as follows:

> H1: Students assigned to the teacher who antagonizes (i.e., antagonistic condition) will achieve the lowest scores (out of 100) on the cognitive learning quiz compared to the positive and neutral conditions.
>
> H2: Students assigned to the teacher who appropriately/positively engages (i.e., positive condition) will achieve the highest scores (out of 100) on the cognitive learning quiz compared to the antagonistic and neutral conditions.
>
> H3: Students assigned to the neutral teacher (i.e., neutral condition) will not significantly differ on the cognitive learning quiz (out of 100) from those who are assigned to the teacher who antagonizes (i.e., antagonistic condition). If a statistically significant relationship occurs, it will have a small effect size.

In addition to the primary hypotheses, secondary analyses were conducted to investigate participant perceptions of the instructor, uncivil student, and how the interaction between the uncivil student and instructor impacted their learning environment. Additionally, analyses were conducted to assess if these perceptions have any relationship with cognitive learning quiz scores. Given the exploratory nature of these secondary analyses, no apriori hypotheses were made.

Method

Participants

Overall, 75 participants consented to participate in Study 2 but did not answer any questions, and were removed. Additionally, 8 participants were removed from Study 2 for not answering Question 1 correctly (*"Who was the lecture about?"*), 1 participant was removed for finishing the study in less than 10 minutes, 8 were removed for finishing the study in over two hours, and 4 were removed for missing data on key variables of interest (e.g., manipulation check questions). The final Study 2 sample was $N = 121$. The participants from Study 1 did not significantly differ from participants in Study 2, so the datasets were combined and analyzed.

The full sample included 252 undergraduate students enrolled at UNT aged 18-54 years ($M_{age} = 21.41$, $SD = 3.85$; 70.0% women). Overall, the sociodemographic makeup of the full sample was representative of UNT's student population. At the beginning of the summer semester, undergraduate students enrolled at UNT were able to participate in the study online via Qualtrics survey system and compensated via extra credit at their professor's discretion. Inclusion criteria for the study was that participants were (1) 18 years of age or older, and (2) gave consent to participate. See Table 4 for the full sample sociodemographic information.

Table 4

Full Sample Sociodemographics (%)

	Full Sample *N*=252	Antagonism *n* = 87	Positive *n* = 79	Neutral *n* = 85
Race/Ethnicity				
Latinx/Hispanic	16.7	13.9	21.2	15.5
European/White	23.0	19.4	24.2	25.4
African American	12.0	19.4	7.6	8.5
Asian	13.9	12.5	12.1	16.9
Other	17.2	19.4	16.7	15.5
Multi-racial/ethnic	12.0	11.1	13.6	11.3
Year				
Freshman	14.4	19.5	12.8	10.6
Sophomore	26.0	24.1	26.9	27.1
Junior	28.4	27.6	25.6	31.8
Senior	30.0	26.4	34.6	29.4
Major				
Psychology	14.4	19.5	12.8	10.6
Biology	26.0	24.1	26.9	27.1
Criminal Justice	28.4	27.6	25.6	31.8
English	30.2	26.4	34.6	29.4
Business	1.2	2.3	0.0	1.2
Gender				
Woman	70.0	79.3	66.7	62.8
Man	25.6	18.4	28.2	30.6
Nonbinary	2.8	0.0	2.6	4.7
Transman	0.8	1.1	1.3	0.0
Transwoman	0.4	0.0	0.0	1.2
Genderfluid	0.4	0.0	1.3	0.0
Neurodiverse (Yes)	22.4	25.3	21.5	20.2
Accommodations				
Yes	14.3	18.2	5.9	17.6
Sometimes	21.4	22.7	23.5	17.6
Age *M*(*SD*)	21.74 (5.05)	20.82 (2.96)	22.09 (5.93)	22.35 (5.75)

Measures

Lecture Videos

Three simulated online classroom environments were created, with all confederates and the teacher having their cameras on. Each video contained the following: 6 confederates acting as students, 1 confederate acting as the uncivil student, and 1 instructor. A confederate committed the exact same student incivility in all three videos, and these incivilities were based on previous works (e.g., Campbell et al., 2020). Specifically, the student incivilities that were utilized in the study were annoyances, such as being unprepared for class, talking out of turn, being distracting, and having their phone go off. These incivilities were chosen because they are reported as the most common incivilities that occur in the classroom (Feldmann, 2001; Burke et al., 2014).

The lecture material was the exact same in every condition and was focused on Franz Mesmer, a lesser-known psychologist to account for participant's knowledge of the topic. The manipulation for each video was how the instructor responded to the student incivility. In Video 1 (i.e., antagonism condition video), the instructor responded to the student incivility with a teacher misbehavior (e.g., Goodboy & Myers, 2015). In Video 2 (i.e., positive condition video), the instructor responded to the student incivility in a positive and appropriate manner (e.g., Alberts et al., 2010). In Video 3 (i.e., neutral condition video), the instructor responded neutrally to the student incivility (e.g., Boysen, 2012). The antagonism condition video lasted 6 min and 16 s, the positive condition video lasted 5 min 45 s, and the neutral condition video lasted 5 min and 3 s. Importantly, the student incivility lasted approximately 5-10 seconds and the instructor response lasted approximately 15-20 seconds in each video to ensure standardization across groups. However, the neutral condition video was about 50 seconds shorter than the antagonism

and positive condition videos due to the nature of ignoring a student incivility (e.g., Boysen, 2012; Goodboy et al., 2018). Lastly, participants were able to rewind, pause, and fast forward the lecture, just as they would be able to in an online classroom that utilized recorded lectures. The same videos used in Study 1 are used in Study 2.

Instructor Misbehavior Scale-Antagonism Subscale

The Instructor Misbehavior Scale-Antagonism Subscale (IMS-Antagonism) will be used to assess instructor misbehaviors (Goodboy & Myers, 2015). Specifically, Study 2 used the 8-item antagonism subscale as a manipulation check for the lecture videos and has excellent reliability (α = .95 from Study 1; α = .91 from Goodboy et al., 2015). Items are on a Likert scale ranging from 0 (*never*) to 4 (*very often*), with items such as "The instructor tells students their opinions are wrong because their opinion is right." and "The instructor screams or yells at students." In addition to the IMS-Antagonism subscale, face-valid questions were given as a manipulation check to assess participants perception of the instructor and the uncivil student. Participants were asked, "If you had to choose, which word best describes the instructor you saw in the video?" and asked to choose one of the following: antagonistic, positive, or neutral. Participants were then asked "If you had to choose, which word best describes the student you saw in the video?" and asked to choose one of the following: disruptive/uncivil, engaged, or Neutral. Lastly, participants were asked, "What kind of impact did the classroom environment have on your ability to learn the material presented?" and asked to answer on a sliding scale from *disruptive* (0) to *supportive* (100).

Cognitive Learning Quiz

To measure cognitive learning, a 50-item multiple choice quiz was given to participants to assess their learning of the material covered in the lecture video. This quiz includes questions

such as, “What were the early techniques of animal magnetism?” and “How did the Royal Commission’s report shift the views of animal magnetism?” These questions are based on the material covered in the lecture video, and each question has 4 response options.

Demographics

Participant demographics (e.g., age, race, year in school) were assessed via face-valid questions. Additionally, a neurodiversity face-valid question asked participants to indicate if they are neurodiverse (i.e., “yes” or “no”) and how they are neurodiverse (e.g., autism, attention deficit disorder, etc.) to assess the limitation of previous works (see Goodboy et al., 2018).

Procedure

At the beginning of the summer semester, undergraduate students enrolled at UNT were able to participate in the study online via Qualtrics survey system. First, participants were presented with consent forms approved by UNT’s IRB. Second, participants were randomly assigned to either the antagonism, positive, or neutral condition. Importantly, the survey is programmed to disallow students from moving on from the video until the video was completed in its entirety. For example, the positive condition video was 5 minutes and 45 seconds long, so participants were not shown a “next” button until 5 minutes and 45 seconds had passed since they hit the “play” button. When prompted to watch the video, participants were told not to take notes, and that they’d be quizzed on actions/content once the video was over. Immediately after the video, a counterbalanced design is implemented to randomly assign students to either first answer 50 questions about the lecture content (i.e., the cognitive learning quiz) and then answer 10 questions about their perception of the instructor and uncivil student, or vice versa. Additionally, the 50-item cognitive learning quiz questions were randomized to account for any potential ordering effects. Lastly, participants were asked to answer sociodemographic questions

(e.g., race/ethnicity, gender, year in school), debriefed, and thanked for participation. Upon completion of the study participants were granted extra credit at the discretion of their professor. The same methodological designed used in Study 1 was used in Study 2 (see Figure 1).

Analytic Approach

The Study 2 data was analyzed for missing data, and cases with properties of bad data were identified. Specifically, participants were not included in final analyses if they did any of the following: (1) did not answer Question 1 correctly ("Who was the lecture about?"), (2) finished the study in less than 10 minutes, (3) finished the study in over 2 hours, (4) answered the same answer choice for each question (i.e., straight lining behavior), or (5) had any missing data on key variables of interest (i.e., manipulation check questions and the 50-question cognitive learning quiz).

The manipulation check questions were assessed via total scores on the IMS-Antagonism subscale, and a one-way analysis of variance (ANOVA) was conducted to assess differences of IMS-Antagonism total scores across conditions. Additionally, a chi-square test was conducted to evaluate if there were any differences between video condition and participant perception of the uncivil student. An item analysis was conducted to evaluate the quality of the 49-item cognitive learning quiz questions. The corrected item-to-total correlation coefficient was assessed to evaluate how any one-item was correlated to the total score. Items that had a low item-to-total correlation and increased the overall Cronbach's α when deleted were removed incrementally until the Cronbach's α could not be improved.

For primary hypotheses, a one-way ANOVA was conducted to assess the cognitive learning differences between the three groups (antagonism, positive, and neutral conditions). The independent variable for the ANOVA was the group membership and the dependent variable was

the grade on the cognitive learning quiz (out of 100). Post-hoc analyses, specifically Tukey's, were conducted to assess which video conditions were statistically significantly different from each other. For secondary analyses, frequencies and descriptives were first conducted to examine how participants in each video condition perceived the uncivil student and instructor, as well as how the interaction between the uncivil student and instructor impacted their learning environment. Second, a 3 (Video Condition) x 3 (Instructor Perception) factorial ANOVA was conducted to investigate any potential interaction effects between video condition and the participants perception of the instructor. Third, a one-way ANOVA was conducted to evaluate how Instructor Perception (antagonistic, positive, neutral) impact cognitive quiz scores. Lastly, bivariate correlations were conducted to examine the relationship between instructor antagonism, the participant's perception of the learning environment, and cognitive learning.

Results

For the entire sample, the mean total quiz score on the cognitive learning quiz was 61.82% (*SD* = 16.68), and the distribution for each video was as follows: antagonism condition video (*n* = 87, *m* = 62.85, *sd* = 17.36), positive condition video (*n* = 79, *m* = 59.80, *sd* = 17.04), and neutral condition video (*n* = 86, *m* = 62.63, *sd* = 15.64). For teacher perception, results of the one-way ANOVA suggest that there were statistically significant differences between video condition and teacher perception, $F(2,249) = 57.46$, $p < .001$, $\eta p^2 = .32$, such that the antagonism condition teacher was perceived statistically significantly different from both the positive ($p < .001$) and neutral ($p < .001$) condition teachers. Specifically, the antagonism condition had the highest mean IMS-Antagonism score (*m* = 2.75, *sd* = 1.17), followed by the neutral condition (*m* =1.23, *sd* = 1.09) and the positive condition (*m* = 1.05, *sd* = 1.14). Interestingly, there was not a statistically significant difference of teacher perception between the positive and neutral

conditions (p = .558). For participant perceptions of the student, results of the chi-square test suggest that there were no statistically significant differences between video condition and perception of the uncivil student $\chi^2(4,252) = 5.44$, p = .245. The results suggest that the majority of participants reported the uncivil student as "engaged." Unsurprisingly, for participants assigned to the positive condition, those who reported the uncivil student as "engaged" primarily reported the positive instructor as "antagonistic" (39.4%) and "neutral" (36.4%). Interestingly, for participants assigned to the positive condition, those who reported the student as "disruptive/uncivil" primarily reported the positive instructor as "neutral" (45.2%) and "antagonistic" (38.7%). See Table 5 for all responses.

Table 5

Study 2 Teacher and Student Perception Frequencies/Descriptives (%)

	Antagonism Condition	Positive Condition	Neutral Condition
Instructor Perception			
Antagonistic	90.8	39.2	45.3
Positive	4.6	20.3	5.8
Neutral	4.6	40.5	48.8
Uncivil Student Perception			
Disruptive/Uncivil	26.4	39.2	41.9
Engaged	50.6	41.8	37.2
Neutral	23.0	19.0	20.9
Instructor Antagonism Score	2.75 (1.17)	1.05 (1.14)	1.23 (1.09)
Learning Environment Impact	27.41 (26.42)	38.90 (23.24)	36.06 (19.16)

Note: For Instructor Perception and Uncivil Student Perception, participants were asked to choose one of the three words listed in the table, percentages are the frequency at which that word was chosen for each Video Condition. Antagonism subscale from 0 (Never) – 4 (Very often), means and standard deviations are shown. Learning Environment Impact question was a sliding scale from 0 (Disruptive) – 100 (Supportive), means and standard deviations are shown.

An item analysis was conducted on Study 2 participants only for exploratory purposes. The original cognitive learning quiz contained 50 items. Since question 1 was used as a data

quality check and participants were only included in final analyses if they answered that question correctly, it was not included in the item analysis. The original item analysis with 49 items had an initial Cronbach's $\alpha = .878$. As previously mentioned, items that had a low item-to-total correlation and increased the overall Cronbach's α when deleted were removed incrementally until the Cronbach's α could not be improved. The final number of items kept were 46 items, and the overall Cronbach's $\alpha = 0.884$. See Table 6 for the Study 2 item analysis results.

Table 6

Study 2 Item Analysis Results

Question	Item-to-total correlation	α if deleted
2.What was Franz Mesmer interested in?	0.387	0.880
3. What was Franz Mesmer's theory about the fundamental nature of life called?	0.630	0.877
4. What is animal magnetism?	0.282	0.882
5. What were the early techniques of animal magnetism?	0.490	0.879
6. Franz Mesmer would have his patients swallow ____ before performing animal magnetism on them.	0.430	0.880
7. After the patients would swallow iron fillings, Franz Mesmer would wave ___ around the patient.	0.480	0.879
8. Eventually, Franz Mesmer would use his ___ or other objects to wave around his patient.	0.335	0.881
9. Franz Mesmer would perform _____ on his patients, where he would use his hands or other objects to wave around his patients.	0.448	0.879
10. Once Franz Mesmer would perform passes, his patient would first undergo a___state.	0.232	0.882
11. After the patient would go into a trance-like state, they would then undergo a _____ state.	0.426	0.879
12. In order, what three things would happen during animal magnetism for the patient to be healed?	0.235	0.882
13. Why was the Royal Commission created?	0.392	0.880
14. What is a Royal Commission?	0.357	0.880

(table continues)

Question	Item-to-total correlation	α if deleted
15. Who was on the Royal Commission?	0.394	0.880
16. Who was the head of the Royal Commission?	0.442	0.879
17. What was Antoine-Laurent Lavoisier?	0.227	0.883
18. What was Jean-Sylvain Bailly?	0.285	0.882
20. How many hypotheses did the Royal Commission have about animal magnetism?	0.361	0.880
21. What was the Royal Commission's first hypothesis?	0.353	0.880
23. How many trials did the Royal Commission use to test their hypotheses?	0.405	0.880
24. What occurred in Trial 1?	0.209	0.883
25. What was Trial 1 known as?	0.319	0.881
26. What occurred in Trial 2?	0.422	0.879
27. What was Trial 2 known as?	0.439	0.879
28. What were the results of the Royal Commission's investigation?	0.381	0.880
29. What did the Royal Commission call animal magnetism by itself?	0.376	0.880
30. How many copies of the Royal Commission's report were disseminated?	0.279	0.882
32. How did the Royal Commission's report shift the views of animal magnetism?	0.143	0.884
33. The Royal Commission's investigation was foundational for our understanding of ___.	0.360	0.880
34. The Royal Commission's report demonstrated the importance of _____.	0.473	0.879
35. The Royal Commission's report helped us to better understand the power of ____.	0.375	0.880
36. The Royal Commission's investigation into Mesmer's animal magnetism has had a lasting impact on the way we study psychological phenomena. How?	0.393	0.880
37. Could Mesmer's animal magnetism cure disease?	0.231	0.883
38. What did Mesmer believe was an imperceptible magnetic fluid that pervaded the universe?	0.191	0.883
39. What did Mesmer believe was the cause of most diseases?	0.427	0.880
40. Franz Mesmer was a __ physician.	0.550	0.877

(table continues)

Question	Item-to-total correlation	α if deleted
41. When was Mesmer in Paris?	0.246	0.882
42. What did Mesmer claim to hold?	0.242	0.882
43. Mesmer claim that he could cure almost any illness using only his ____.	0.326	0.881
44. What would happen when a patient would be in a crisis state?	0.443	0.879
45. After all the flow-inducing activity, Mesmer believed that the patient would be ___.	0.263	0.882
46. Mesmer was interested in the interaction between natural energies in the universe, like ___, and the human body.	0.394	0.880
47. Animal Magnetism, as Mesmer believed, was an ____ magnetic fluid that pervaded the universe.	0.237	0.882
49. A royal commission is an investigation, _____, into a matter of great importance.	0.303	0.881
50. Mesmer believed that most disease were cause due to an abnormal flow of ____ inside the body.	0.380	0.880

Note. α = Cronbach's alpha.

Item analyses show that similar results were found from Study 1 to Study 2. As such, a global item analysis was conducted for the full sample (i.e., Study 1 and Study 2 combined). Specifically, those that had an item-to-total correlation approximately less than .100 were removed. The original item analysis with 49 items had an initial Cronbach's α = .871. As previously mentioned, items that had a low item-to-total correlation and increased the overall Cronbach's α when deleted were removed incrementally until the Cronbach's α could not be improved. The final number of items kept were 44 items, and the overall Cronbach's α = 0.880. See Table 7 for the final item analysis results.

Table 7

Global Item Analysis Results

Question	Item-to-total correlation	α if deleted
2.What was Franz Mesmer interested in?	0.369	0.877
3. What was Franz Mesmer's theory about the fundamental nature of life called?	0.485	0.876
4. What is animal magnetism?	0.307	0.878
5. What were the early techniques of animal magnetism?	0.448	0.876
6. Franz Mesmer would have his patients swallow ____ before performing animal magnetism on them.	0.449	0.876
7. After the patients would swallow iron fillings, Franz Mesmer would wave ___ around the patient.	0.481	0.876
8. Eventually, Franz Mesmer would use his ___ or other objects to wave around his patient.	0.299	0.878
9. Franz Mesmer would perform _____ on his patients, where he would use his hands or other objects to wave around his patients.	0.411	0.877
10. Once Franz Mesmer would perform passes, his patient would first undergo a___state.	0.368	0.877
11. After the patient would go into a trance-like state, they would then undergo a _____ state.	0.411	0.876
12. In order, what three things would happen during animal magnetism for the patient to be healed?	0.193	0.880
13. Why was the Royal Commission created?	0.399	0.877
14. What is a Royal Commission?	0.291	0.879
15. Who was on the Royal Commission?	0.383	0.877
16. Who was the head of the Royal Commission?	0.434	0.876
18. What was Jean-Sylvain Bailly?	0.217	0.880
19. What was Joseph-Ignace Guillotin?	0.144	0.881
20. How many hypotheses did the Royal Commission have about animal magnetism?	0.430	0.876
21. What was the Royal Commission's first hypothesis?	0.325	0.878
23. How many trials did the Royal Commission use to test their hypotheses?	0.392	0.877
25. What was Trial 1 known as?	0.303	0.878

(table continues)

Question	Item-to-total correlation	α if deleted
26. What occurred in Trial 2?	0.408	0.876
27. What was Trial 2 known as?	0.366	0.877
28. What were the results of the Royal Commission's investigation?	0.411	0.876
29. What did the Royal Commission call animal magnetism by itself?	0.398	0.877
30. How many copies of the Royal Commission's report were disseminated?	0.362	0.877
32. How did the Royal Commission's report shift the views of animal magnetism?	0.450	0.876
33. The Royal Commission's investigation was foundational for our understanding of ___.	0.382	0.878
34. The Royal Commission's report demonstrated the importance of _____.	0.436	0.876
35. The Royal Commission's report helped us to better understand the power of ____.	0.433	0.876
36. The Royal Commission's investigation into Mesmer's animal magnetism has had a lasting impact on the way we study psychological phenomena. How?	0.173	0.881
37. Could Mesmer's animal magnetism cure disease?	0.125	0.881
38. What did Mesmer believe was an imperceptible magnetic fluid that pervaded the universe?	0.421	0.877
39. What did Mesmer believe was the cause of most diseases?	0.540	0.874
41. When was Mesmer in Paris?	0.208	0.88
42. What did Mesmer claim to hold?	0.362	0.877
43. Mesmer claim that he could cure almost any illness using only his ____.	0.448	0.876
44. What would happen when a patient would be in a crisis state?	0.300	0.878
45. After all the flow-inducing activity, Mesmer believed that the patient would be ___.	0.402	0.877
46. Mesmer was interested in the interaction between natural energies in the universe, like ___, and the human body.	0.338	0.878
47. Animal Magnetism, as Mesmer believed, was an ____ magnetic fluid that pervaded the universe.	0.365	0.877

(table continues)

Question	Item-to-total correlation	α if deleted
48. Did Mesmer always require patients to swallow iron fillings?	0.215	0.880
49. A royal commission is an investigation, _____, into a matter of great importance.	0.321	0.878
50. Mesmer believed that most disease were cause due to an abnormal flow of ____ inside the body.	0.500	0.875

Note. α = Cronbach's alpha.

For primary hypotheses, a one-way ANOVA was conducted to assess the cognitive learning differences between the three groups (antagonism, positive, and neutral conditions). Importantly, the final 44 items resulting from the global item analysis were utilized in the creation of the cognitive learning quiz score. Results of the one-way ANOVA suggests that there were no statistically significant differences between video condition and cognitive learning, $F(2,249) = 1.03$, $p = .358$, $\eta p^2 = .008$. For secondary analyses, a 3 (Video Condition) x 3 (Instructor Perception) factorial ANOVA was conducted to investigate any potential interaction effects between video condition and the participant's perception of the instructor. Results of the factorial ANOVA suggests that there were no statistically significant main or interaction effects between video condition and the participant's perception of the instructor on quiz score, $F(8,243) = 1.02$, $p = .423$, $\eta p^2 = .032$.

Additionally, a one-way ANOVA was conducted to assess cognitive learning differences between the three Instructor Perception options (antagonistic, positive, and neutral). Results of the one-way ANOVA suggests that there were no statistically significant differences between instructor perception and cognitive learning, $F(2,249) = .596$, $p = .552$, $\eta p^2 = .005$. Lastly, bivariate correlations were conducted to examine the relationship between instructor antagonism, the participant's perception of the learning environment, and cognitive learning. Results of the correlations suggest that instructor antagonism and cognitive learning are not statistically

significantly related to each other (r = .068, p = .284). Results of the bivariate correlations also show that the participant's perception of the learning environment and cognitive learning are not statistically significantly related to each other (r = .083, p = .188).

CHAPTER 4

DISCUSSION, LIMITATIONS AND FUTURE DIRECTIONS

Discussion

Research suggests that how an instructor manages student incivilities can impact a variety of aspects in the classroom, from how students communicate to their instructor to how competent the instructor is perceived by students (Claus et al., 2012; Goodboy et al., 2010). However, limited work has assessed the impact of instructor responses to student incivilities on the learning environment. One study conducted by Goodboy and colleagues (2018) suggests a small but meaningful difference in learning outcomes between students who were assigned to a neutral professor versus an antagonistic professor, such that those assigned to the neutral professor did slightly better on a cognitive learning quiz compared to the antagonistic professor group. However, the current study is the first project to assess the impact of instructor responses to student incivility on cognitive learning. Overall, the primary results of the study demonstrate that how an instructor responds to student incivility does not significantly impact student's cognitive learning.

Unlike previous research (e.g., Goodboy et al., 2018), the current study did not find meaningful differences between professor responses to student incivilities and participant performance on a cognitive learning task. However, this is the first study to the author's knowledge to (1) investigate how an instructor's response to student incivility impacts learning, and (2) implement a true experimental design with random assignment and a control group. When participants were randomly assigned to different instructors—antagonistic, positive, or neutral—learning outcomes and student perceptions did not always adhere to expectations. Findings from Study 1 and its replication (Study 2) suggest that what teaching experts suggest

does not seem to work in this controlled environment (i.e., online learning environments). Since participants did not perform significantly different on the cognitive learning quiz regardless of what type of instructor they were randomly assigned to, it may be that students in an online learning environment are better able to remain engaged regardless of student or instructor behavior. If this is the case, this is a good outcome for online learning and may be attributable to the online learner's ability to have more control over the learning environment versus in a F2F classroom.

Drawing from previous works that suggest students regard neutral professors similarly to antagonistic professors (Boysen, 2012; Meyers et al., 2006), the final primary hypothesis of the current study was that students assigned to the neutral condition would do about the same as those in the antagonistic condition. Results from the study supported this hypothesis, such that there were no significant differences in quiz scores between those in the antagonistic condition (m = 62.85) versus the neutral condition (m = 62.63). In line with previous works conducted by Boysen (2012) and Meyers and colleagues (2006), preliminary analyses indicated that students assigned to the neutral condition perceived the instructor almost equally as antagonistic (45.3%) as they did neutral (48.8%). Although Goodboy and colleagues' (2018) work suggests that those assigned to antagonistic instructors would perform significantly worse on a cognitive learning quiz compared to those assigned to a neutral instructor, the current study findings did not support this. Importantly, a major differentiation of Goodboy and colleagues (2018) work to the current study is that the current study implemented a third condition (i.e., positive instructor), assessed the impact of the instructor's reaction to student incivilities, and implemented a true experimental design. The current study's results combined with previous works further highlight the need for more experimental work to be conducted to better understand the relationship, if

any, between how an instructor's response to student incivility impacts learning.

Limitations and Future Directions

Study limitations should be taken into consideration. First, while these findings suggest that there is no relationship between how an instructor responds to study incivility and cognitive learning, there could be a third factor that may moderate this relationship that was not assessed in the current study (e.g., student affect towards the content material/learning in general, self-motivation, attention, rapport). As such, future studies should examine what third variable, if any, may moderate the relationship of instructor responses to student incivility on cognitive learning. Second, the current study was conducted via online with pre-recorded lecture videos, which may not allow for researchers to examine this phenomenon in an online course where the lecture is being live-streamed. Therefore, future studies should examine this relationship using a live-streamed lecture set up where participants can experience everything happening in real time, just as they would in a synchronous online classroom. Third, the cognitive learning task quiz was given to students right after the lecture video was over, which may not be generalizable to a classroom setting. If professors give students quizzes, they are typically given on a different day than when the material is first presented to students. Additionally, students are often assigned reading material prior to the lecture, which this study did not do. As such, future researchers should conduct longitudinal studies to better assess the nature of this relationship. Fourth, while a strength of the current study is the sociodemographic diversity of participants, a limitation is that the study is primarily comprised of participants who identify as women (70%). Since a major limitation of this field in general is lack of reporting sample sociodemographics, future research should investigate this relationship among diverse samples.

Threats to the internal validity of the current study should be addressed. Since the

primary manipulation method for assessing how instructor responses to student incivilities impact learning were through pre-recorded non-validated lecture videos, the videos created for the current study may not have been strong enough to accurately assess the relationship between variables. Although the current study IMS-Antagonism subscale scores were similar to that of Goodboy and colleagues (2018) work, it may be that the videos could have been revised to see a starker contrast between the three groups. Previous literature suggests that when professors respond to student incivilities with respectful communication and friendly verbal reminders of appropriate classroom behavior, the instructor should be seen positively (e.g., Alberts et al., 2010; Burke et al., 2014). However, preliminary analysis results suggested that participants did not view the positive condition instructor as "positive", which may have impacted their performance in the study. This suggests that the current study's manipulation may have been less than ideal. As such, the pre-recorded lecture videos pose an internal validity threat to the current project and may hinder the study's ability to better assess the causal relationship that might occur between these variables. Additionally, participants in the current study have experienced (and are still experiencing) the COVID-19 pandemic along with global unrest. As such, there may be a historical threat to the internal validity of the current study. It may be that the historical health threats and global unrest that occurred at the time the individuals participated in the study could have skewed study findings. Lastly, because the cognitive learning quiz and the face-valid instructor/student perception questions are not validated measures, there may an instrumentation threat to the internal validity of the current study. It may be that the wording of the questions and response points on the post lecture quiz and face-valid instructor/student perception questions could have influenced how participants responded.

Threats to the external validity of the current study should be discussed. Since the sample

is comprised of UNT students enrolled in a psychology class, one threat to the external validity of the current project is sample bias. Given that students that take psychology courses may differ from those that do not, it may be that these results are not generalizable to college students more broadly (e.g., students that do not take psychology courses). It may also be that those who are willing to participate in research also differ from college students who do not participate in research. Additionally, UNT is a large four-year public university, and it may be that the results found are not generalizable to students that attend other types of universities (e.g., community college or private liberal arts universities). Unlike the current study, typical practice for college courses allows students several days or weeks to study before taking a quiz over lecture material. Since participants were given the cognitive learning quiz directly after the lecture video, these findings may not be generalizable to actual classrooms or reflect coursework expectations. Also, students in the current study primarily reported the uncivil student as "engaged" across the three conditions, which may not generalize to an actual classroom setting. Since a cross-sectional design was utilized, it may be that the student attitudes towards "engaged" students may shift over time as the student repeatedly exhibits "incivilities" over a typical 16-week semester. Lastly, because pre-recorded online lecture videos were shown to participants, the main threat to external validity is the generalizability of the current study findings to live online classroom dynamics. It may be that students react differently to, and have different perceptions of, instructor responses to student incivility when the following things occur: (1) the student elected to take the course, and (2) the student will receive a grade that impacts overall GPA/academic success.

Overall, the current project's results suggest that there is a gap between what student's view as good classroom management (i.e., responding to an uncivil student in any way) and what

faculty suggest to be good classroom management (e.g., friendly verbal reminders of appropriate classroom behavior in the positive condition; Alberts et al., 2010; Burke et al., 2014). Since student evaluations of their professor's class are a part of the tenure and promotion process, the gap between student and instructor views of good classroom management should be explored in future studies. This is especially true, given that the university relies on students to rate faculty (e.g., Student Perception of Teaching evaluations at UNT) for tenure and promotion consideration even though (1) students are not trained in classroom management/pedagogy, and (2) faculty are not typically in the classroom to rate the professor's performance. So, how are we accurately rating faculty classroom management (e.g., responding to uncivil students) and teaching when faculty themselves are not doing the rating, and students and faculty seem to have different ideas of what good classroom management is? To answer this question, future researchers should replicate the current study utilizing a faculty sample to assess what differences, if any, are seen between faculty and student perceptions of good classroom management.

Despite the current study limitations, this work adds to the literature focused on teacher misbehaviors, student incivilities, and cognitive learning by serving as the first experimental investigation of the impact instructor reactions to student incivilities has on cognitive learning. The current study found that how an instructor responds to student incivility does not significantly impact student's cognitive learning. While some results support findings from previously published works, the main findings of the study show significant divergence from previous correlational and theoretical works that suggest there *is* a significant relationship between teacher misbehaviors, uncivil students, and their impact on cognitive learning. In sum, the current study's findings serve as a baseline experimental investigation of how instructor

responses to student incivilities impact cognitive learning. As such, the current project's findings illuminate the need for continued experimental investigation of the impact instructor reactions to student incivilities has on learning. The current project also shows that there is a gap between what students and faculty view as good classroom management. These findings may also highlight the need for colleges to restructure how they evaluate instructors, not just with student evaluations but also with faculty evaluations.

REFERENCES

Alberts, H. C., Hazen, H. D., & Theobald, R. B. (2010). Classroom incivilities: The challenge of interactions between college students and instructors in the US. Journal of Geography in Higher Education, 34, 439-462. doi:10.1080/03098260903502679

Al-Azawei, A., & Lundqvist, K. (2015). Learner differences in perceived satisfaction of an online learning: An extension to the technology acceptance model in an Arabic sample. *Electronic Journal of E-Learning, 13*(5), pp412-430.

Allen, I. E., & Seaman, J. (2010). *Learning on demand: Online education in the United States, 2009*. Sloan Consortium. PO Box 1238, Newburyport, MA 01950.

American Educational Research Association, American Psychological Association, and the National Council on Measurement in Education. (2014). Standards for educational & psychological testing. Washington, DC.

Anderson, D., Imdieke, S., & Standerford, N. S. (2011). Feedback please: Studying self in the online classroom. *Online Submission, 4*(1), 3-15. Retrieved from https://files.eric.ed.gov/fulltext/ED522939.pdf

Anderson, A. A., Brossard, D., Scheufele, D. A., Xenos, M. A., & Ladwig, P. (2013). The “nasty effect”: Online incivility and risk perceptions of emerging technologies. *Journal of Computer-Mediated Communication, 19*(3), 373–387. doi:10.1111/jcc4.12009

Baker, J. P., & Goodboy, A. K. (2018). Students’ self-determination as a consequence of instructor misbehaviors. *Communication Research Reports, 35*(1), 68-73. doi:10.1080/08824096.2017.1366305

Bell, R. L., Rahman, S., Sutanto, P. W., Till, A., Desselle, B., & Quddus, M. (2010). Perceptions of encounters with disrespectful students: Comparing administrators’ and business faculty’s views. *Business Studies Journal, 2*(2), 1-20.

Bhowmik, M., Banerjee, B. R., & Banerjee, J. (2013). Role of Pedagogy in Effective Teaching.*Basic Research Journal of Education Research and Review, 2*(1), 1-5. Retrieved from https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.1087.9346&rep=rep1&type=pdf

Bjorklund, W. L., & Rehling, D. L. (2009). Student perceptions of classroom incivility. *College Teaching, 58*, 15-18. doi:10.1080/87567550903252801

Black, L. J., Wygonik, M. L., & Frey, B. A. (2011). Faculty-preferred strategies to promote a positive classroom environment. *Journal on Excellence in College Teaching, 22*, 109-134.

Bohn, C. M., Roehrig, A. D., & Pressley, M. (2004). The first days of school in the classrooms of two more effective and four less effective primary-grades teachers. *The Elementary School Journal, 104*(4), 269-287. doi:10.1086/499753

Boice, B. (1996). Classroom incivilities. *Research in Higher Education, 37*, 453-486. doi:10.1007/bf01730110

Boice, R. (2000). *Advice for new faculty members: Nihil nimus.* Boston: Allyn and Bacon. doi:10.1080/1937156x.2003.11949513

Boston, C. (2002). The concept of formative assessment. *Practical Assessment, Research, and Evaluation, 8*(1), 9.

Boysen, G. A. (2012). Teacher responses to classroom incivility: Student perceptions of effectiveness. *Teaching of Psychology, 39*(4), 276-279. doi:10.1177/0098628312456626

Broeckelman-Post, M. A., Tacconelli, A., Guzmán, J., Rios, M., Calero, B., & Latif, F. (2016). Teacher misbehavior and its effects on student interest and engagement. *Communication Education, 65*(2), 204-212. doi:10.1080/03634523.2015.1058962

Burke, L. A., Karl, K., Peluchette, J., & Evans, W. R. (2014). Student incivility: A domain review. *Journal of Management Education, 38*(2), 160-191. doi:10.1177/1052562913488112

Campbell, L. O., Tinstman Jones, J., & Lambie, G. W. (2020). Online academic incivility among adult learners. *Adult Learning, 31*(3), 109-119. doi:10.1177/1045159520916489

Cavanaugh, D. (2005). Teaching online – A time comparison. *Online Journal of Distance Learning Administration, 8*, 1–9.

Chen, B. H., & Chiou, H. H. (2014). Learning style, sense of community and learning effectiveness in hybrid learning environment. *Interactive Learning Environments, 22*(4), 485-496. doi:10.1080/10494820.2012.680971

Clark, C. M., Otterness, N., Jun, W. Y, Allerton, B., Black, M., Juan, C. M., & Wei, F. (2010). Descriptive study of student incivility in the People's Republic of China. *Journal of Cultural Diversity, 17*, 136-150.

Clark, C. M., & Springer, P. J. (2007). Thoughts on incivility: Student and faculty perceptions of uncivil behavior in nursing education. *Nursing Education Perspectives, 28*(2), 93-97.

Clark, C. M., Werth, L., & Ahten, S. (2012). Cyber-bullying and incivility in the online learning environment, part 1: Addressing faculty and student perceptions. *Nurse Educator, 37*(4), 150–156. doi:10.1097/nne.0b013e31825a87e5

Claus, C. J., Booth-Butterfield, M., & Chory, R. M. (2012). The relationship between instructor misbehaviors and student antisocial behavioral alteration techniques: The roles of

instructor attractiveness, humor, and relational closeness. *Communication Education, 61*(2), 161-183. doi:10.1080/03634523.2011.647922

Coe, K., Kenski, K., & Rains, S. (2014). Online and uncivil? Patterns and determinants of incivility in newspaper website comments. *Journal of Communication, 64*(4), 658–679. doi:10.1111/jcom.12104

Dixson, D. D., & Worrell, F. C. (2016). Formative and summative assessment in the classroom. *Theory into Practice, 55*(2), 153-159. doi:10.1080/00405841.2016.1148989

Driscoll, A., Jicha, K., Hunt, A. N., Tichavsky, L., & Thompson, G. (2012). Can online courses deliver in-class results? A comparison of student performance and satisfaction in an online versus a face-to-face introductory sociology course. *Teaching Sociology, 40*(4), 312-331. doi:10.1177/0092055x12446624

Dumont, G., & Raggo, P. (2018). Faculty perspectives about distance teaching in the virtual classroom. *The Journal of Nonprofit Education and Leadership, 8*(1), 41-46. doi:10.18666/jnel-2018-v8-i1-8372

Fassinger, P. A. (2000). How classes influence students' participation in college classrooms. *The Journal of Classroom Interaction,* 38-47. Retrieved March 24, 2021, from http://www.jstor.org/stable/23870446

Feldmann, L. J. (2001). Classroom civility is another of our instructor responsibilities. *College Teaching, 49,* 137-140. doi:10.1080/87567555.2001.10844595

Gaias, L. M., Johnson, S. L., Bottiani, J. H., Debnam, K. J., & Bradshaw, C. P. (2019). Examining teachers' classroom management profiles: Incorporating a focus on culturally responsive practice. *Journal of School Psychology, 76,* 124-139. doi:10.1016/j.jsp.2019.07.017

Galbraith, M. W., & Jones, M. S. (2010). Understanding incivility in online teaching. *Journal of Adult Education, 39*(2), 1-10.

Garrison, C., & Ehringhaus, M. (2018). *Formative and summative assessments.* Retrieved from http://standardslearning.pbworks.com/f/Formative+and+Summative+Assessments+in+the+Classroom.pdf

Golish, T.D., & Olson, L.N. (2000). Students’ use of power in the classroom: An investigation of student power, teacher power, and teacher immediacy. *Communication Quarterly, 48,* 293_310. doi: l0.1080/01463370009385598

Goodboy, A. K., & Myers, S. A. (2015). Revisiting instructor misbehaviors: A revised typology and development of a measure. *Communication Education, 64*(2), 133-153. doi:10.1080/03634523.2014.978798

Goodboy, A. K., Myers, S. A., & Bolkan, S. (2010). Student motives for communicating with instructors as a function of perceived instructor misbehaviors. *Communication Research Reports, 27*(1), 11-19. doi:10.1080/08824090903526604

Goodboy, A. K., & Bolkan, S. (2009). College teacher misbehaviors: Direct and indirect effects on student communication behavior and traditional learning outcomes. *Western Journal of Communication, 73*(2), 204-219. doi:10.1080/10570310902856089

Goodboy, A. K., Bolkan, S., & Baker, J. P. (2018). Instructor misbehaviors impede students' cognitive learning: Testing the causal assumption. *Communication Education, 67*(3), 308-329. doi:10.1080/03634523.2018.1465192

Gurung, R. A., Hackathorn, J., Enns, C., Frantz, S., Cacioppo, J. T., Loop, T., & Freeman, J. E. (2016). Strengthening introductory psychology: A new model for teaching the introductory course. *American Psychologist, 71*(2), 112. doi:10.1037/a0040012

Harlen, W., Crick, R. D., Broadfoot, P., Daugherty, R., Gardner, J., James, M., & Stobart, G. (2002). *A systematic review of the impact of summative assessment and tests on students' motivation for learning*. Retrieved from https://dspace.stir.ac.uk/bitstream/1893/19607/1/SysRevImpSummativeAssessment2002.pdf

Helms, J. L. (2014). Comparing student performance in online and face-to-face delivery modalities. *Journal of Asynchronous Learning Networks, 18*(1), n1. doi:10.24059/olj.v18i1.348

Holton, S. A. (1995). It's nothing new! A history of conflict in higher education. *New Directions for Higher Education, 92*, 11-18.

Hung, M. L., Chou, C., Chen, C. H., & Own, Z. Y. (2010). Learner readiness for online learning: Scale development and student perceptions. *Computers & Education, 55*(3), 1080-1090. doi:10.1016/j.compedu.2010.05.004

Jahng, N., Krug, D., & Zhang, Z. (2007). Student achievement in online distance education compared to face-to-face education. *European Journal of Open, Distance and E-Learning, 10*(1). Retrieved from https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.433.6715&rep=rep1&type=pdf

Jones, V. F., & Jones, L. S. (2012). *Comprehensive classroom management: Creating communities of support and solving problems* (10th ed.). Upper Saddle River, NJ: Pearson.

Kearney, P., Plax, I. G., Richmond, V. P., & Mccroskey, J. C. (1984). Power in the classroom IV: Alternatives to discipline. *Annals of the International Communication Association, 8*(1), 724-746. doi:10.1080/23808985.1984.11678598

Kearney, P., Plax, T. G., Hays, E. R., & Ivey, M. J. (1991). College teacher misbehaviors: What students don't like about what teachers say and do. *Communication Quarterly*, *39*(4), 309-324. doi:10.1080/01463379109369808

Kebritchi, M., Lipschuetz, A., & Santiague, L. (2017). Issues and challenges for teaching successful online courses in higher education: A literature review. *Journal of Educational Technology Systems*, *46*(1), 4-29. doi:10.1177/0047239516661713

Kemp, N., & Grieve, R. (2014). Face-to-face or face-to-screen? Undergraduates' opinions and test performance in classroom vs. online learning. *Frontiers in Psychology*, *5*, 1278. https://doi.org/10.3389/fpsyg.2014.01278

Korpershoek, H., Harms, T., de Boer, H., van Kuijk, M., & Doolaard, S. (2016). A meta-analysis of the effects of classroom management strategies and classroom management programs on students' academic, behavioral, emotional, and motivational outcomes. *Review of Educational Research*, *86*(3), 643-680. doi:10.3102/0034654315626799

Krathwohl, D. R., Bloom, B. S., & Masia, B. B. (1964). *Taxonomy of education objectives: The classification of educational goals. Handbook 2: Affective domain*. New York: McKay.

Kushnir, L. P., & Berry, K. C. (2014). *Inside, outside, upside down: New directions in online teaching and learning*. International Association for the Development of the Information Society. Retrieved from https://files.eric.ed.gov/fulltext/ED557256.pdf

Kyei-Blankson, L., & Keengwe, J. (2013). Faculty-faculty interactions in online learning environments. In *Learning tools and teaching approaches through ICT advancements* (pp. 127-135). IGI Global. doi:10.4018/978-1-4666-2017-9.ch012

Lampman, C., Phelps, A., Bancroft, S., & Beneke, M. (2009). Contrapower harassment in academia: A survey of faculty experience with student incivility, bullying, and sexual attention. *Sex Roles, 60*, 331-346. doi:10.1007/s11199-008-9560-x

Lasiter, S., Marchiondo, L., & Marchiondo, K. (2012). Student narratives of faculty incivility. *Nursing Outlook*, *60*(3), P121–P126. doi:10.1016/j.outlook.2011.06.001

Li, C. S., & Irby, B. (2008). An overview of online education: Attractiveness, benefits, challenges, concerns and recommendations. *College Student Journal*, *42*(2).

Lyons, J. F. (2004). Teaching U.S. history online: Problems and prospects. *The History Teacher, 37*, 447–456. doi:10.2307/1555549

Martin, Q., & Olson, D. (2011). College cyber-bullying: The virtual bathroom wall. *Journal of Technology in Student Affairs.* Retrieved from http://studentaffairs.com/ejournal/Summer_2011/CollegeCyberbullying.html

Marzano, R. J., Marzano, J. S., & Pickering, D. J. (2003). *Classroom management that works: Research-based strategies for every teacher.* Alexandria, VA: Association for Supervision and Curriculum Development.

McInnerney, J. M., & Roberts, T. S. (2004). Online learning: Social interaction and the creation of a sense of community. *Journal of Educational Technology & Society*, *7*(3), 73-81. Retrieved from https://www.jstor.org/stable/jeductechsoci.7.3.73?seq=1#metadata_info_tab_contents

McKinne, M., & Martin, B. N. (2010). Higher education faculty and student perceptions of classroom incivility. *Journal of College & Character, 11*(2), 2-17. doi:10.2202/1940-1639.1249

Meyers, S. A., Bender, J., Hill, E. K., & Thomas, S. Y. (2006). How do faculty experience and respond to classroom conflict? I*nternational Journal of Teaching and Learning in Higher Education, 18*(3), 180-187.

Myers, S., Martin, M., & Mottet, T. (2002). Students' motives for communicating with their instructors: Considering instructor socio-communicative style, student socio-communicative orientation, and student gender. *Communication Education*, *51*(2), 121-133. doi:10.1080/03634520216511

Niess, M., & Gillow-Wiles, H. (2013). Developing asynchronous online courses: Key instructional strategies in a social metacognitive constructivist learning trajectory. *Journal of Distance Education, 27*(1), 1-23. Retrieved from http://www.ijede.ca/index.php/jde/article/download/831/1473?inline=1

Nordstrom, C. R., Bartels, L. K., & Bucy, J. (2009). Predicting and curbing classroom incivility in higher education. *College Student Journal, 43*(1), 74+.

Ober, T. M., Che, E., Brodsky, J. E., Raffaele, C. & Brooks, P. J. (Eds.). (2020). *How we teach now: The GSTA guide to transformative teaching.* Retrieved from the Society for the Teaching of Psychology web site: http://teachpsych.org/ebooks/howweteachnow-transformative

Palvia, S., Aeron, P., Gupta, P., Mahapatra, D., Parida, R., Rosner, R., & Sindhi, S. (2018). Online education: Worldwide status, challenges, trends, and implications. *Journal of Global Information Technology Management, 21*(4), 233–241. doi:10.1080/1097198x.2018.1542262

Parker, K., Lenhart, A., & Moore, K. (2011). *The digital revolution and higher education: College presidents, public differ on value of online learning*. Pew Internet & American Life Project.

Rafferty, R., & Vander Ven, T. (2014). “I hate everything about you”: A qualitative examination of cyberbullying and on-line aggression in a college sample. *Deviant Behavior, 35*(5), 364–377. doi:10.1080/01639625.2013.849171

Royce, A. (2000). *A survey on academic incivility at Indiana University: Preliminary report.* Bloomington: Center for Survey Research, Indiana University.

Scherrer, C. R. (2011). Comparison of an introductory level undergraduate statistics course taught with traditional, hybrid, and online delivery methods. *INFORMS Transactions on Education, 11*(3), 106-110. doi:10.1287/ited.1110.0063

Seaman, J. E., Allen, I. E., & Seaman, J. (2018). *Grade increase: Tracking distance education in the United States*. Babson Survey Research Group. Retrieved from https://files.eric.ed.gov/fulltext/ED580852.pdf

Shea, P. (2007). Bridges and barriers to teaching online college courses: A study of experienced online faculty in thirty-six colleges. *Journal of Asynchronous Learning Networks, 11*(2). Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.453.4788&rep=rep1&type=pdf

Sidelinger, R. J., & Bolen, D. M. (2015). Compulsive communication in the classroom: Is the talkaholic teacher a misbehaving instructor?. *Western Journal of Communication, 79*(2), 174-196. doi:10.1080/10570314.2014.943416

Smith, G. (2007). How does student performance on formative assessments relate to learning assessed by exams?. *Journal of College Science Teaching, 36*(7), 28. Retrieved from https://www.proquest.com/docview/200370662?fromopenview=true&pq-origsite=gscholar

Swinney, L., Elder, B., & Seaton, P. (2010). Lost in a crowd: Anonymity and incivility in the accounting classroom. *The Accounting Educators' Journal, 20*(1). Retrieved from https://aejournal.com/ojs/index.php/aej/article/view/153

Tantleff-Dunn, S., Dunn, M. E., & Gokee, J. L. (2002). Understanding faculty-student conflict: Student perceptions of precipitating events and faculty responses. *Teaching of Psychology, 29,* 197-202. doi:10.1207/s15328023top2903_03

Taras, M. (2005). Assessment–summative and formative–some theoretical reflections. *British Journal of Educational Studies, 53*(4), 466-478. doi:10.1111/j.1467-8527.2005.00307.x

Vallade, J. I. (2020). Instructor misbehavior frequency, severity, and impact on learning: Comparing student and teacher perceptions. *Western Journal of Communication*, 1-24. doi:10.1080/10570314.2020.1756397

Watts, L. K., Wagner, J., Velasquez, B., & Behrens, P. I. (2017). Cyberbullying in higher education: A literature review. *Computers in Human Behavior, 69,* 268–274. doi:10.1016/j.chb.2016.12.038

Wise, A. F., Speer, J., Marbouti, F., & Hsiao, Y. (2013). Broadening the notion of participation in online discussions: Examining patterns in learners' online listening behaviors. *Instructional Science, 41,* 323–343.

Wolff, C. E., van den Bogert, N., Jarodzka, H., & Boshuizen, H. P. (2015). Keeping an eye on learning: Differences between expert and novice teachers' representations of classroom

management events. *Journal of Teacher Education*, *66*(1), 68-85. doi:10.1177/0022487114549810

Wolff, B. G., Wood-Kustanowitz, A. M., & Ashkenazi, J. M. (2014). Student performance at a community college: Mode of delivery, employment, and academic skills as predictors of success. *Journal of Online Learning and Teaching*, *10*(2). Retrieved from https://jolt.merlot.org/vol10no2/wolff_0614.pdf

Wright, M., & Hill, L. H. (2015). Academic incivility among health sciences faculty. *Adult Learning*, *26*(1), 14–20. doi:10.1177/1045159514558410

Xu, D., & Jaggars, S. S. (2014). Performance gaps between online and face-to-face courses: Differences across types of students and academic subject areas. *The Journal of Higher Education*, *85*(5), 633-659. doi:10.1353/jhe.2014.0028

Yue, C. L., Bjork, E. L., & Bjork, R. A. (2013). Reducing verbal redundancy in multimedia learning: An undesired desirable difficulty? *Journal of Educational Psychology*, *105*(2), 266 –277. doi:10.1037/a0031971