The Mediating Effects of Social Comparison on Faculty Burnout, Teaching Anxiety, and Satisfaction Among Faculty Who Taught During the COVID-19 Pandemic

Leslie Ramos Salazar1 · Nancy Garcia2 · Heidi Huntington1 · Mary E. Brooks2

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Abstract
The global COVID-19 pandemic led to an increase in faculty who taught using video conferencing software, such as Zoom, across different modalities in higher education. Drawing from social comparison theory, this study examines upward and downward social comparison as parallel mediators of the interrelationships between faculty burnout, teaching anxiety, and teaching satisfaction during the COVID-19 pandemic using a cross-sectional sample of 219 faculty. Findings reveal the mediating effect of upward social comparison on the relationship between faculty’s burnout and teaching anxiety. Additionally, upward social comparison had a mediating effect on faculty’s burnout and teaching satisfaction. Implications for teaching and learning using video conferencing tools are also offered.

Keywords Social comparison · Burnout · Teaching anxiety · Video conferencing · COVID-19
Introduction

The global COVID-19 pandemic affected the educational system by leading to the closure of universities. In response, online remote learning programs that incorporated video conferencing software (e.g., Zoom, WebEx, Microsoft Teams) were widely implemented to reach students as an alternative to meeting in a traditional classroom setting. In higher education, video conferencing—which incorporates the use of a camera, microphone, and speaker located on or connected to a computer—allows students to continue sharing a learning environment synchronously and remotely across a variety of course modalities (e.g., hybrid, hyflex, online).

While video conferencing across modalities is customary in higher education, it was not as ubiquitous globally prior to 2020. As a result of the COVID-19 pandemic, faculty quickly adjusted their teaching methods by incorporating video conferencing—a pedagogical method new to many. With numerous educators learning to teach online and utilizing video conferencing software during the pandemic, teaching confidence wavered. Prior to the pandemic, faculty and instructors who taught online courses experienced burnout symptoms including emotional exhaustion, depersonalization, and poor personal accomplishment (Hogan & McKnight, 2007), along with changes in job satisfaction (Bolliger & Wasilik, 2009). During the COVID-19 pandemic, faculty burnout rates increased due to the high demand for remote teaching experiences (Weißenfels et al., 2022). To make sense of their professional identity and evaluate their own technological and pedagogical skills, faculty often engaged in social comparison behaviors (Brown et al., 2007).

Social comparison is the process of comparing people’s abilities to others who may perform above or below themselves (Festinger, 1954). In higher education, social comparison occurs through various means including interactions, peer teaching observations, and written descriptions of teaching performance. Faculty who compare themselves upward may seek to improve their performance, while those who compare themselves downward seek to boost their self-esteem and feelings of superiority (Rahimi et al., 2017). Research related to teaching face-to-face courses shows that upward and downward social comparison tendencies correlate with teaching anxiety and burnout (Gibbons, 1986; Yang & Robinson, 2018). Further, those who exhibit high social comparison tendencies experience higher levels of burnout (Kitchel et al., 2012). Thus, when teaching synchronously in virtual environments, faculty might engage in social comparison leading to similar negative outcomes.

This study extends prior research by using social comparison theory (SCT) to examine upward and downward social comparison as potential mediators of the relationship between faculty burnout, anxiety, and satisfaction. This research also fills a gap in the literature by examining the interrelationships of these factors among university educators who taught using video conferencing software across course modalities (e.g., hyflex, hybrid, online) during the COVID-19 pandemic.
Review of the Literature

Faculty Burnout and Teaching Anxiety

Maslach (1982) defined burnout as “a syndrome of emotional exhaustion, depersonification, and reduced personal accomplishment” (p. 2) and is especially prevalent in those whose careers are people-focused. Furthermore, the World Health Organization (2019) conceptualized burnout as the stress resulting from a person’s occupation—rather than outside experiences—that is unmanageable, filled with cynicism, negativity, and reduced energy and confidence in one’s job.

In the case of university professors, the responsibilities of the job go well beyond teaching courses using different modalities. Professors frequently engage in people-focused responsibilities such as advising students and student organizations, collaborating with colleagues and students on research, and completing service activities to improve the university and academic discipline based on their expertise. As Evans (2015) posits, professors carry a great load of expectations, which then leads to an assumption that professors will be “all things to all people, and assigned an ever-expanding list of multifarious responsibilities demanding superhuman capacity” (p. 677).

In a study, de Araújo Leite et al. (2019) found that, out of 100 professors, more than half were experiencing “early stages of burnout” (p. 172). Further, burnout was most prevalent among professors who carried a heavier teaching load. Duke et al. (2020) also revealed definitive burnout among most of the 66 assistant professors teaching in a pediatric department. Among university professors, gender has been shown to be related to burnout and stress, such that females reported higher levels of burnout and stress than male did (i.e., Redondo-Florez et al., 2020).

As a result of the onset of the COVID-19 pandemic and the forced shift to online teaching for many educators during that unruly and confusing time, many scholars have researched the impact that teaching online had in terms of burnout (i.e., Chen et al., 2020; Daumiller et al., 2021; Kumawat, 2020). Results from these studies were mixed and indicated that although stress and burnout were prevalent among many educators as they navigated to teaching online, their job satisfaction and personal accomplishment were also found to be positive factors for a multitude of professors.

Teaching anxiety is often connected to educators’ burnout. The American Psychological Association (2021) defines anxiety as “an emotion characterized by feelings of tension, worried thoughts, and physical changes” (para. 1). In a study to understand anxiety among psychology professors, Gardner and Leak (1994) posit that anxiety is prevalent because of the public speaking nature of teaching and numerous student interactions. They describe teaching anxiety as “the distress that comes from either the anticipation of teaching, the preparation for teaching, or the experiences that occur while teaching” (Gardner & Leak, 1994, p. 29). In their national survey of approximately 100 psychology professors, they found that almost 90% reported teaching anxiety and most often at the onset of a semester. The authors also found that both presenting in front of students and
class preparation were the most anxiety-inducing teaching responsibilities. Additionally, both physical and psychological reactions were induced (Gardner & Leak, 1994). Ameen and colleagues (2002) found similar results based on their study of 333 accounting professors. Of those professors, approximately 80% reported dealing with more spread out teaching anxiety over the entire semester, with course preparation as the most frequent cause of anxiety. While the majority of those had psychological reactions, a good portion also reported physical reactions.

Supported by these findings in the literature, the researchers expect faculty who taught using video conferencing across modalities during the COVID-19 pandemic to experience burnout and teaching anxiety. While some professors were well-versed in teaching online and using video conferencing technology, numerous others were novices. The concepts of faculty burnout and teaching anxiety in university faculty are expected to be intensified during a global health crisis. Thus, the researchers propose the following hypothesis:

H1: Faculty burnout is positively related to teaching anxiety.

Social Comparison as a Mediator of Faculty Burnout and Teaching Anxiety

Social comparison refers to the process of comparing one’s abilities to others in a similar professional situation (Festinger, 1954) to evaluate oneself and improve professional communication skills (Brown et al., 2007). Social comparison is inevitable in the workplace because it occurs through observation and interaction with colleagues (Marescaux et al., 2021). Upward social comparison refers to comparing ourselves to others in the profession (e.g., higher education) who are more skillful (Festinger, 1954). In contrast, downward social comparison refers to comparing ourselves to others who are less skillful than us (Festinger, 1954).

Cross-sectional and longitudinal studies have shown that teachers’ burnout is positively related to upward and downward comparison while controlling for gender (Carmona et al., 2006; Van Horn et al., 1997). Teachers with high levels of burnout can become uncertain and insecure, and in turn, compare themselves to other teachers’ pedagogical approaches and work performance through observation (Carmona et al., 2006). Also, teachers with high levels of burnout who engage in upward social comparison may experience emotions such as envy and resentment, especially if achieving advanced teaching goals is seen as unachievable (Rahimi et al., 2017). In teachers, upward social comparison has positively predicted all three levels of burnout (emotional exhaustion, depersonalization, and reduced personal accomplishments) and teacher anxiety (Rahimi et al., 2017).

According to the theory, social comparison may trigger negative emotions such as anxiety because it derives from seeing others as competitors and, perhaps, a threat (Yang et al., 2020). Feelings of inferiority (Smith, 2000; Zheng et al., 2020) and the motivation to self-improve to assimilate to others who perform better than us can also lead to stress and anxiety (Yang & Robinson, 2018). Upward social comparison
may reduce one’s self-image and self-efficacy, affecting anxiety (Hu & Liden, 2013; Maslach, 1993).

On the other hand, studies have suggested that making downward social comparisons can reduce anxiety (Gibbons, 1986). Individuals engage in downward social comparison as a self-protective mechanism and to protect their ego and self-esteem (Wills, 1981). For this reason, individuals experience more confidence and positive effects (Lyubomirsky & Ross, 1997) when engaged in downward comparison, which explains the reduction of anxiety. Studies have also confirmed an inverse relationship between downward comparison and negative mental health outcomes such as depressive symptoms (Li et al., 2021; Stewart et al., 2013). Downward social comparisons can maintain employees’ emotional well-being (Bailis & Chipperfield, 2006). Given the above research findings, it is expected that faculty who engage in downward social comparison may report reduced anxiety.

While correlations have been demonstrated by prior literature between burnout, social comparison, and anxiety, to date, no previous study has examined upward and social comparison as potential parallel mediators of the relationship between faculty burnout and teaching anxiety. The literature mentioned earlier has demonstrated a clear link between faculty burnout and anxiety (McClanahan et al., 2007; Türkoglu & Cansoy, 2017). And since social comparison is positively related to teacher’s burnout (Carmona et al., 2006; Rahimi et al., 2017) and anxiety (Gibbons, 1986; Yang & Robinson, 2018), it is expected that social comparison (upward and downward) may mediate this relationship. High upward social comparison should enhance the relationship between faculty burnout and their teaching anxiety, whereas downward social comparison should weaken this relationship. Thus, the following hypothesis is proposed:

H2: Social comparison (upward and downward) has an indirect mediating effect on faculty burnout and teaching anxiety after controlling for control variables.

Faculty Burnout and Teaching Satisfaction

Much attention has been paid to understanding antecedents for faculty’s work satisfaction (Collie et al., 2012). Studies of teaching satisfaction base definitions of the construct on Locke’s (1969) conceptualization stating that job satisfaction is an individual’s perception of how well their work matches their job values. In other words, job satisfaction is understood as deriving a sense of fulfillment or gratification from one’s work (Collie et al., 2012; Ho & Au, 2006).

Previous research demonstrates that teaching satisfaction is related to various factors, including elements within and outside an individual’s control. For example, in a study of faculty teaching online courses, Bolliger and Wasilik (2009) found that factors from three dimensions—student-related, instructor-related, and institution-related—all influenced faculty members’ satisfaction with their online teaching work. Likewise, prior research demonstrates that workload stress is negatively associated with teachers’ job satisfaction, while efficacy is positively related; a strong sense of self-efficacy and confidence may even counteract stress derived from
student behavior (Collie et al., 2012). Along the same lines, lower levels of teaching satisfaction are associated with higher levels of psychological distress and teaching stress (Ho & Au, 2006).

Burnout is an aversive, affective response to workplace demands, characterized by feelings of “weariness, disinterest and reduced performance” (Watts & Robertson, 2011, p. 34), with emotional exhaustion and psychological distress being key elements of burnout. Like teaching satisfaction, faculty burnout is associated with individuals’ perceptions of their work environment. For faculty, role conflict—such being a teacher and a researcher—can contribute to burnout (Li et al., 2020; Li et al., 2021). Specifically, perceptions of work overload, psychological demands of the job, low control over the work environment, lack of social support, and even “fit” between the individual’s values and motivations and that of the institution are all understood to be contributing factors to burnout. On the other hand, having a sense of being valued by the department is beneficial for reducing faculty burnout (Duke et al., 2020), a point reminiscent of institutional factors in job satisfaction.

The literature on burnout indicates that the characteristic emotional exhaustion of burnout can set off a cycle of increased cynicism leading to a reduced capacity to respond to others’ needs. For teachers, this reduced capacity to respond to students’ needs can fuel the sense of reduced professional accomplishment that is a characteristic of burnout, leading in turn to “negative self-evaluation and a feeling of not doing a good job” (Skaalvik & Skaalvik, 2020, p. 603). In a study, instructors’ expressive dissent and vengeful dissent are related positively to burnout, but negatively related to organizational commitment and teacher satisfaction (Frisby et al., 2015). During the COVID-19 pandemic, faculty faced an unprecedented need to revamp course content and delivery with little notice. This abrupt change to faculty members’ job demands and workplace environment is reminiscent of contributing factors to burnout and decreased teaching satisfaction. Thus, given the associations in the literature between stress, burnout, and self-perceptions of workplace performance, it is expected that faculty burnout and teaching satisfaction will be negatively associated with one another. Therefore, the researchers propose the following hypothesis:

H3: Faculty burnout is negatively related to teaching satisfaction.

Social Comparison as a Mediator of Faculty Burnout and Teaching Satisfaction

Social comparison research has examined the effects of social comparison on satisfaction. Upward social comparisons can provide information for self-improvement and evaluative purposes; however, such comparisons can also yield negative effects, such as dissatisfaction with one’s job duties (Buunk et al., 1990). For instance, engaging in upward social comparison can negatively impact one’s self-esteem and job performance (Buunk et al., 1990). In education, teachers who engage in upward social comparison reported high levels of teacher burnout and the intention to quit the profession (Htway & Myo Thein, 2020). However, when
teachers cannot assimilate to fulfill higher teaching standards, this can reduce their satisfaction (Htway & Myo Thein, 2020).

Engaging in downward social comparison has a self-enhancing effect, such as boosting self-esteem, satisfaction, and emotional well-being (Bailis & Chipperfield, 2006). When engaging in downward social comparison in education, some teachers report a superiority effect or the feeling of being better than other teachers (Saber Gigasari & Hassaskhah, 2017). Teachers who engage in downward social comparison also report increased job satisfaction (Rahimi et al., 2017). Teachers who may be under stress are likely to compare themselves to those who may be performing at a lower teaching level or who deal with student misbehaviors (Rahimi et al., 2017).

Studies have shown that burnout is associated with the direction of social comparison (Buunk et al., 2001; Chwalisz et al., 1992). When individuals feel in control of themselves, upward comparison yields positive outcomes such as satisfaction than downward comparison does (Testa & Major, 1990). However, if individuals are under stress and overwhelmed and feel threatened by their environment, both upward and downward social comparison can yield negative effects such as dissatisfaction (Aspinwall & Taylor, 1993; Van der Zee et al., 1998) and burnout (Michinov, 2005; Saber Gigasari & Hassaskhah, 2017).

Another study found that a high level of teacher burnout is positively associated with both upward and downward comparison (Brenninkmeijer et al., 2001). When teachers reported burnout, the intensity of the social comparison exacerbated, such that one may feel either superior or inferior based on the type of comparison (Brenninkmeijer et al., 2001). In the study, teachers experiencing burnout reported a decrease in positive superiority or the feeling of being better than their colleagues when engaging in social comparison. It could be that teachers who reported being superior from downward social comparison with one’s colleagues might develop a buffer effect against the burnout, whereas those who report feeling inferior from upward social comparison may experience negative effects such as dissatisfaction (Brenninkmeijer et al., 2001; Halbesleben & Buckley, 2006).

Faculty who experience burnout and compare themselves with other colleagues have also reported negative consequences. A longitudinal study found that teachers who engaged in upward social comparison experienced envy of their colleagues, resulting in reduced teaching satisfaction (Caramona et al., 2006). Specifically, teachers who report burnout and who engage in social comparison have reported reduced job satisfaction (Kitchel et al., 2012). Prior work has found a mediating effect of social comparison on burnout and negative affect in working populations (Han et al., 2020); however, to date, there is a need to examine social comparison as a potential mediator in the context of university educators who taught using different modalities during the COVID-19 pandemic, in relation to teacher burnout and teaching satisfaction. Based on the literature findings, this study will explore the direction of social comparison as a mediator of the relationship between faculty burnout and teaching satisfaction.

H4: Social comparison (upward and downward) has an indirect mediating effect on faculty burnout and teaching satisfaction after controlling for control variables.
Method

Participants

Approximately 600 faculty members were invited to participate in this study. The response rate was 36.5%, with a total of 219 questionnaire responses. Of those, 25.6% identified as men and 73.1% as women, with ages ranging from 25 to 75. The ethnic composition of the sample was 73.1% Caucasian/non-Hispanic, 7.8% Hispanic/Latino(a), 5.5% African-American/Black, 5.5% Asian-American/Asian, and 8.3% other. The faculty ranking included 5.6% part-time instructor, 11.6% full-time instructor, 36.1% assistant professor, 26.9% associate professor, 16.7% full professor, and 3.2% other. Of the participants, 39.4% were tenured, 32.6% on tenure track, and 28% were non-tenure track. A total of 11.1% indicated having a disability, and 31.5% of faculty indicated having at least one chronic illness. Course modalities taught using video conferencing software (e.g., Zoom, Webex, Microsoft Teams) during the COVID-19 pandemic included 7.8% hybrid (25–50% online), 5% hyflex (alternate between face-to-face mode and online mode), 16.5% blended (remote students participate using synchronous technologies in face-to-face classes), 0.9% face-to-face (incorporate technology within the classroom), 6.4% only online (electronic), and 63.3% mixed modalities (combination of course modalities). When asked on the types of video conferencing technologies used during the COVID-19 pandemic, 53.9% used Zoom, 6.8% used WebEx, 2.7% used Microsoft Teams, 3.7% used Blackboard, 0.5% used D2L, and 32.4% used a combination of multiple video conferencing technologies. The disciplines of faculty included 2.3% agriculture, 8.7% business, 0.5% computer science, 11.4% education, 0.5% engineering, 7.3% fine arts, 1.4% health, 10.5% humanities, 2.3% math, 4.1% natural sciences, 3.7% nursing, 20.1% social sciences, and 27.4% other/multiple disciplines.

Procedures and Instrumentation

After Institutional Review Board approval (#2020.11.007) at a medium-sized, Midwestern university, faculty participants were recruited in the fall of 2020 via email, listservs, and social media invitations using a convenience sampling approach. Participants who volunteered to participate provided informed consent and completed a 15-min Qualtrics questionnaire about their perceptions of using video conferencing software (e.g., Zoom) across modalities during the COVID-19 pandemic. The inclusion criterion was that participants must be currently working as faculty members for an educational institution, have taught at least one synchronous class using video conferencing platforms since the pandemic began, and read and understand English. Participants were provided with definitions of the different course modality types (e.g., hybrid, hyflex, blended) in which they used video conferencing technology (e.g., Zoom, Webex, Microsoft Teams). Hybrid was defined as “any course in which 25–50% of classroom lectures and other seat time is replaced by instructor-guided online learning activities or experiences and may include both synchronous
and asynchronous discussion sessions as well as online quizzes, games, discovery labs, and simulations” (Lin, 2008, p. 59). Hyflex was defined as a course that “combines hybrid learning in a flexible way, such that students can either attend face-to-face class sessions, participate online or do both (i.e., alternate between face-to-face mode and online mode), according to their needs and availability, without learning deficits” (Lakhal et al., 2014, p. 1075). Blended synchronous refers to “learning and teaching where remote students participate in face-to-face classes by means of rich-media synchronous technologies such as video conferencing, web conferencing, or virtual worlds” (Bower et al., 2015, p. 1). Face-to-face is a class that meets in person in a classroom or a laboratory setting.

Faculty Burnout

The burnout measure, short version (BMS) developed by Malach-Pines (2005), was used to measure faculty burnout. This scale includes ten validated items from Pines and Aronson’s (1988) original burnout measure. Participants respond to the frequency of feeling “tired,” “disappointed with people,” “trapped,” “helpless,” and “hopeless” in their faculty job using a Likert-type scale from 1 (never) to 7 (always). Higher degrees of agreement indicated higher degrees of burnout. This scale achieved alpha reliability of 0.92.

Social Comparison

The Iowa-Netherlands Comparison Orientation Scale (INCOM) assessed both upward and downward social comparison (Gibbons & Buunk, 1999). Upward social comparison included 6 Likert-scale items. Participants were asked to compare themselves against others. Sample items included “When evaluating my current performance (e.g., how I am doing at home, work, school, or wherever), I often compare with others who are doing better than I am” and “When things are going poorly, I think of others who have it better than I do.” The alpha reliability in this study was 0.89. Downward social comparison included 6 Likert-scale items. Sample items included “When I wonder how good I am at something, I sometimes compare myself with others who are worse at it than I am” and “I sometimes compare myself with others who have accomplished less in life than I have.” The alpha reliability of this measure was 0.86. In each statement, participants indicated agreement from 1 (I disagree strongly) to 5 (I agree strongly), and higher values represented higher social comparison tendencies.

Teaching Anxiety

The teaching anxiety scale developed by Ameen et al. (2002) was used to measure teaching anxiety. This study included 7 items, for instance, “When teaching, I feel the students are evaluating me,” “Speaking style such as gestures and vocabulary should be much different while teaching than during everyday conversation,” and “Losing your place or slips of tongue and similar mistakes can ruin a lecture.”
Participants responded with their degree of agreement ranging from 1 (strongly disagree) to 5 (strongly agree). Higher levels of agreement indicated higher levels of teaching anxiety. The alpha reliability of this scale was 0.70.

**Teaching Satisfaction**

Ho and Au’s (2006) teaching satisfaction scale, a 5-item Likert-type scale, was used to measure teaching satisfaction. Participants indicated their degree of agreement on each statement about how they felt with their teaching job during the COVID-19 pandemic from 1 (strongly disagree) to 7 (strongly agree). Sample items included “In most ways, being a teacher is closer to my ideal,” “I am satisfied with being a teacher,” and “If I could choose my career over, I would change almost nothing.” The alpha reliability in this study was 0.87.

**Control Variables**

This study included five control variates, which were found to be correlated with at least one of the study’s variables in each of the models. The control variables included gender, ethnicity, chronic illness, disability, and course modality taught since the COVID-19 pandemic began. Course modalities included hybrid, hyflex, blended synchronous, face-to-face, and fully online (asynchronous), and mixed (combination of modalities).

**Analysis**

Data were analyzed using IBM SPSS 23.0, such as descriptive statistics and zero-ordered correlational analyses. Bootstrap analyses with 5000 samples were conducted using model 4 of SPSS Process macro v3, to investigate two multiple mediation models, with upward (M1) and downward (M2) social comparison as mediators (Hayes, 2013). Parallel multiple mediation models test whether at least two mediators have an indirect effect on the relationship between X and Y (Hayes, 2013). Parallel multiple mediation models are beneficial over single mediation models because they control for covariates and other similar potential mediators that can explain the indirect effect of X on Y (Hayes, 2013). The final sample size of 219 and a low response rate of 36.5% might have occurred for two reasons. First, some faculty might not have felt comfortable participating in the survey or did not have the time during the COVID-19 pandemic. Second, this study did not offer a monetary incentive for participation. To address the low-response rate, a post-hoc power analysis using a sample size of 219 was conducted using Schoemann et al.’s (2017) Monte Carlo power analysis using two parallel mediators with an alpha of 0.05. The first model analysis examining teaching anxiety had a power of 0.98 with a small effect size $f^2$ of 0.09 (observed $R^2=0.08$), and the second model examining teaching satisfaction had a power of 0.64 with a medium effect size $f^2$ of 0.27 (observed $R^2=0.21$).
Results

Preliminary Analysis

Zero-ordered correlations, means, and standard deviations are provided in Table 1. Results showed that faculty burnout ($r=0.27$, $p<0.01$), upward social comparison ($r=0.37$, $p<0.01$), and downward comparison ($r=0.25$, $p<0.01$) were positively correlated to teaching anxiety. Additionally, gender ($r=-0.13$, $p<0.05$), faculty burnout ($r=-0.45$, $p<0.01$), downward social comparison ($r=-0.16$, $p<0.01$), and teaching anxiety ($r=-0.17$, $p<0.01$) were inversely related to teaching satisfaction. The tolerance of the values across variables were below 0.10, and VIF values were below 10, which indicated that multicollinearity was not a problem in this data (Field, 2013).

Parallel Multiple Mediation Analyses

The first model used model 4 with 5000 bootstrap samples using Hayes’ process including faculty burnout (X), upward social comparison (M1), downward social comparison (M2), and teaching anxiety (Y), with the covariates including gender, ethnicity, chronic illness, disability, and course modality. The indirect pathway results are in Table 2, and the pathway coefficients are in Fig. 1. The first step indicated that faculty burnout ($b=0.45$, 95% CI = 0.32 to 0.59, $p<0.001$) was related to upward social comparison after controlling for covariate variables. The second step showed that burnout was positively related to downward social comparison ($b=0.32$, 95% CI = 0.18 to 0.47, $p<0.001$). In the third step, upward social comparison was positively related to teaching anxiety ($b=0.28$, 95% CI = 0.12 to 0.44, $p<0.001$). However, after controlling for upward social comparison and covariates, downward social comparison and faculty burnout were not related to teaching anxiety. The overall effect of the model was significant, $R=0.28$, $R^2=0.08$, $p<0.01$. The total effect of faculty’s burnout on teaching anxiety was also significant ($b=0.27$, 95% CI = 0.13 to 0.41, $p<0.001$). However, the direct effect was not significant ($b=0.12, p=0.11$).

The second model used model 4 with 5000 bootstrap samples using Hayes’ process including faculty’s burnout (X), upward social comparison (M1), downward social comparison (M2), and teaching satisfaction (Y), with the covariates including gender, ethnicity, chronic illness, disability, and course modality. The first step indicated that faculty burnout was positively related to upward social comparison ($b=0.45$, 95% CI = 0.32 to 0.59, $p<0.001$). The second step indicated that faculty burnout was positively related to downward social comparison ($b=0.32$, 95% CI = 0.18 to 0.47, $p<0.001$). In the third step, upward social comparison was positively related to their teaching satisfaction ($b=0.36$, 95% CI = 0.14 to 0.57, $p<0.001$). And downward social comparison was not related to their teaching satisfaction ($b=-0.19$, $p=0.059$). Faculty burnout was inversely related to their teaching satisfaction after controlling for covariates ($b=-75,$
Table 1 Reporting means, standard deviations, and zero-order correlation matrix

| Measure                          | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    |
|---------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1. Gender                       | 1     |       |       |       |       |       |       |       |       |       |       |
| 2. Ethnicity                    | 0.09  | 1     |       |       |       |       |       |       |       |       |       |
| 3. Chronic illness              | 0.02  | 0.16* | 1     |       |       |       |       |       |       |       |       |
| 4. Disability                   | 0.01  | -0.1  | -0.50**| 1     |       |       |       |       |       |       |       |
| 5. Course modality              | 0.06  | 0.17* | 0.05  | -0.02 | 1     |       |       |       |       |       |       |
| 6. Video conferencing type      | -0.04 | 0.08  | -0.01 | -0.09 | 0.05  | 1     |       |       |       |       |       |
| 7. Faculty burnout              | 0.22**| 0.15* | 0.23**| -0.19**| 0.06  | 0.06  | 1     |       |       |       |       |
| 8. Upward social comparison     | 0.12  | 0.02  | 0.08  | -0.02 | 0.06  | 0.03  | 0.44**| 1     |       |       |       |
| 9. Downward social comparison   | 0.04  | -0.03 | -0.01 | -0.04 | -0.02 | 0.03  | 0.30**| 0.57**| 1     |       |       |
| 10. Teaching anxiety            | 0.03  | 0.09  | -0.03 | 0.02  | 0.09  | -0.08 | 0.27**| 0.37**| 0.25**| 1     |       |
| 11. Teaching satisfaction       | -0.13*| 0.02  | -0.04 | 0.06  | 0.01  | 0.06  | -0.45**| -0.07 | -0.16*| -0.17*| 1     |
| M                               | 1.76  | 1.86  | 0.63  | 2.78  | 4.83  | 2.87  | 3.39  | 3.10  | 2.70  | 2.70  | 4.70  |
| SD                              | 0.46  | 1.82  | 1.08  | 0.63  | 1.72  | 2.28  | 1.15  | 0.88  | 0.80  | 0.64  | 1.36  |

*p < .05, **p < .01
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The total effect of the model was significant, $R = 0.46$, $R^2 = 0.21$, $p < 0.001$. The total effect of teachers' burnout on their teaching satisfaction was significant ($b = -0.65$, 95% CI $= -0.83$ to $-0.47$, $p < 0.001$). The direct effect of teachers' burnout on their teaching satisfaction

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**Table 2** Indirect effects of the parallel multiple mediation model on teaching anxiety

| Pathways                  | Effect | Boot SE | BCa 95% CI (lower) | BCa 95% CI (upper) |
|---------------------------|--------|---------|------------------|-----------------|
| $FB \rightarrow Upward \rightarrow TA$ | .13*** | .05     | .04              | .22             |
| $FB \rightarrow Downward \rightarrow TA$ | .02    | .02     | -.04             | .08             |

$FB$, faculty burnout; $Upward$, upward social comparison; $Downward$, downward social comparison; $TA$, teaching anxiety. Bootstrap 5000. Control variables were controlled. *$p<.05$, **$p<.01$, ***$p<.001$

**Fig. 1** Parallel multiple mediation analysis of upward and downward social comparison on teaching anxiety. Note: Standardized path estimates for the parallel multiple mediation analysis controlling for control variables. ***$p<.001$, **$p<.01$, *$p<.05$

**Table 3** Indirect effects of the parallel multiple mediation model on teaching satisfaction

| Pathways                  | Effect | Boot SE | BCa 95% CI (lower) | BCa 95% CI (upper) |
|---------------------------|--------|---------|------------------|-----------------|
| $FB \rightarrow Upward \rightarrow TS$ | .16*** | .06     | .05              | .31             |
| $FB \rightarrow Downward \rightarrow TS$ | -.06   | .04     | -.14             | .01             |

$FB$, faculty burnout; $Upward$, upward social comparison; $Downward$, downward social comparison; $TS$, teaching satisfaction. Bootstrap 5000. Control variables were controlled. *$p<.05$, **$p<.01$, ***$p<.001$
was also significant \( b = -0.75, 95\% \text{ CI} = -0.95 \text{ to } -0.55, \ p < 0.001 \). The indirect pathway results are in Table 3, and the pathway coefficients are in Fig. 2.

**Discussion**

This study examined university faculty’s teaching anxiety and satisfaction outcomes during the COVID-19 pandemic through the lens of social comparison theory. Prior studies have documented high levels of faculty burnout among university professors (Duke et al., 2020; Redondo-Florez et al., 2020). Our results confirm that faculty job burnout was positively and indirectly correlated with social comparison (upward and downward) and teaching anxiety in higher education during the pandemic, specifically among faculty who used video conferencing tools to communicate with their students. This relationship between faculty burnout and teaching anxiety was mediated by upward social comparison. Additionally, faculty burnout was negatively and directly related to teaching satisfaction, as predicted, such that faculty with lower teaching satisfaction reported higher levels of burnout. Again, this result was mediated by upward social comparison.

Previous studies have demonstrated that teachers with high levels of burnout engage in upward social comparison due to feelings of uncertainty, insecurity, and envy (Carmona et al., 2006; Rahimi et al., 2017). The COVID-19 pandemic was unique in that it created greater opportunity for uncertainty, insecurity, and perhaps envy among faculty as they adjusted to new teaching modalities and tools. While the academic profession is known to have high demands and expectations of faculty, the demands and expectations for university professors increased substantially during the COVID-19 pandemic (Mitchell, 2020). Faculty were asked to learn new
video conferencing technologies (e.g., Zoom, Webex, etc.), adapt to new forms of remote teaching, and revamp their courses to adapt to learners’ needs with almost no preparation time (Johnson et al., 2020). These high expectations, the steep learning curve associated with the shift to online teaching coupled with the sudden reliance on video conferencing tools, and the general sense of uncertainty around the pandemic may have set the stage for faculty to engage in upward social comparison and contributed to the teaching anxiety, reduced teaching satisfaction, and faculty burnout observed in our results.

Interestingly, we found no mediation effects of downward social comparison in these results. Faculty burnout had a positive direct relationship with downward social comparison; however, downward social comparison had no direct relationship with teaching anxiety or teaching satisfaction. While downward social comparison was positively related to teaching anxiety and negatively related to teaching satisfaction, these relationships were not significant after controlling for upward social comparison and the other control variables. This suggests that upward social comparison specifically plays a unique role in contributing to faculty burnout, particularly during times of disruption to the profession, such as during the COVID-19 pandemic, while downward social comparison during such a time offers no mitigating result against anxiety or teaching satisfaction. Perhaps this is due in part to the circumstances of the pandemic, as faculty experiencing uncertainty may have looked to colleagues who they perceived to be more experienced or to be adapting to the work expectations during the pandemic to improve their own teaching performance. Also, despite feelings of burnout, it could be that faculty who engaged in downward social comparison might have not suffered from high teaching anxiety because they might have had higher self-esteem and self-efficacy based on their effective teaching modality practices (Bayani & Baghery, 2020), and their perceived faculty burnout did not have an effect on their teaching satisfaction. Also, it has been shown that downward social comparison triggers a buffer effect against burnout symptoms (Brenninkmeijer et al., 2001), and this could explain their lack of increased teaching anxiety.

Faculty may engage in upward social comparison by comparing their teaching abilities and technological performance against others with higher positional rankings and more years of experience. Faculty compare themselves against others by observing other faculty in peer observations (in-person and virtual) or through the self-disclosures of faculty successes through social media such as Facebook and Twitter. This comparison may lead to higher levels of teaching anxiety regarding one’s performance as compared to their colleagues’ social network. Perhaps in looking to other faculty for ideas or support during the pandemic, individual faculty members compared their own experiences to their colleagues’ experiences or perceived results negatively. Our findings extend prior work that has found that teachers with high levels of burnout are likely to engage in upward and downward social comparison (Htway & Myo Thein, 2020), and teachers who compare their performance with those better than themselves are also likely to report reduced satisfaction (Buunk et al., 1990; Htway & Myo Thein, 2020; Van der Zee et al., 1998). Faculty who experienced high levels of burnout and who engaged in upward social comparison might have felt inferior and incompetent during the pandemic (Halbesleben & Buckley, 2006). This can explain their reduced teaching satisfaction.
These findings also align with past research that has found that faculty feeling burnout also experienced workload and teaching stress (Collie et al., 2012; Ho & Au, 2006). Faculty in our study who experienced burnout might have struggled with adapting to the pandemic teaching standards set by their academic departments and colleges or at least felt they were struggling, which may have resulted in their poor teaching satisfaction (Skaalvik & Skaalvik, 2020). Additionally, the rapid demand to convert courses into remote learning during the pandemic contributed to the faculty’s high levels of burnout and reduced teaching satisfaction due to increased technostress (Panisoara et al., 2020). When experiencing negative emotions such as burnout, teachers have reported reduced satisfaction with their job (Molero Jurado et al., 2019). Again, our results provide evidence that faculty burnout may reduce university faculty’s teaching satisfaction.

Implications for Teaching and Learning

The results of this study provide some practical implications for both teaching and learning. Despite faculty’s best efforts, the high demands and external pressures surrounding the teaching and learning environment during the COVID-19 pandemic resulted in high levels of faculty burnout. As this study found, faculty who compare themselves against others who rank higher might experience worse cases of burnout and anxiety, which can reduce their overall teaching satisfaction.

Specifically, administrators should seek to develop and promote faculty peer-mentoring practices that can help in reducing upward social comparison. These practices may include pairing of a faculty members at similar ranks with regular check-ins or professional development opportunities. Doing so can cultivate a mentoring culture based on social support, with an open exchange of resources and ideas for teaching via video conferencing technologies (Halbesleben & Buckley, 2006). Formal and organized peer-mentorship approaches may include organized interactions and professional development opportunities such as trainings and workshops to enhance teaching in the digital environment by promoting online learning as an opportunity to supplement teaching, develop knowledge, and improve competencies. Mindfulness and self-compassion workshops related to teachers’ identity and teaching practices can be sponsored to help faculty overcome any negative effects from upward social comparison. Additionally, direct supervisors or mentors may want to implement processes to provide individual faculty with tailored, positive feedback regarding the success of the individual faculty member’s efforts in order to limit the need for upward social comparison, given its key status as a mechanism for negative outcomes such as burnout, teaching anxiety, and reduced job satisfaction among faculty. This is especially the case during times of disruption to the academy, but may be useful as a general approach, given the likely long-lasting effects of the pandemic on higher education.
Limitations and Future Directions

One major limitation of this study was its cross-sectional nature, which limits the generalizability of the findings. Future research can incorporate a longitudinal design to test the longitudinal effect of upward and downward social comparison on the relationships between teacher burnout, teaching anxiety, and teaching satisfaction during the COVID-19 pandemic. For instance, data collection across a course of a year, 5 years, or 10 years will provide longitudinal evidence of causal links and about the effect of social comparison over time.

Additionally, because data were collected during the COVID-19 pandemic, it is possible that faculty’s teaching anxiety increased regardless of upward or downward social comparison. To overcome this limitation, future research can conduct a meta-analysis of effect sizes to compare teaching anxiety prior and during the COVID-19 pandemic. Because this study lacked a measure assessing the training or assistance provided to remote teaching faculty, future studies may investigate the effects of training or assistance during the pandemic on teacher’s anxiety. This study also did not measure the remote teaching experience of faculty prior to the COVID-19 pandemic, and this might have influenced the results.

Another limitation of this study was the use of self-reported items such as faculty burnout, social comparison, and teaching anxiety. Self-report scales provide insight into the perceptions of higher education faculty; however, they do not provide qualitative information such as their personal feelings, experiences, and observations. Future research may consider conducting qualitative research, including interviews or focus groups that inquire about how faculty experienced social comparison tendencies during the COVID-19 pandemic and the impact on their teaching anxiety and satisfaction.

To add, there is a possibility of a biased sample of faculty who might have only participated due to experiencing negative COVID-19 effects. This study also experienced a low response rate (36.5%), and had a small, convenience, and unrepresentative cross-sectional sample, which suggests that bias might have occurred. And making causal implications is limited given these limitations. Future researchers may need to provide monetary incentives to faculty to increase sample size.

Additionally, the mediation models of this study could be extended to include other mediating factors. For instance, future research can also examine teaching expectancy violations in higher education relationships as a potential mediator using Burgoon’s (1993) expectancy violation theory. Additionally, future work may examine teaching styles (e.g., authority; facilitator) as they relate to teaching anxiety and satisfaction, given their varying levels of preparation. Based on the style, faculty may be experiencing different levels of teaching anxiety and satisfaction (Grasha, 2002).

Lastly, a limitation of this study was that a priori power analysis was not conducted prior to the data collection process. To address this limitation, future research studies need to consider conducting a priori power analysis during the planning stage to estimate the needed sample size to achieve a particular effect size. While this study used a post-hoc power analysis, the sample size was adequate in this study.
Conclusion

This study examined the relationships between faculty burnout, teaching anxiety, and teaching satisfaction among faculty who taught in higher education during the COVID-19 pandemic. Findings suggest that faculty burnout is positively related to teaching anxiety. To address this issue, faculty and administrators may need to provide well-being training and interventions that address burnout in higher education to help faculty better manage their burnout across the semester. Moreover, theoretically speaking, this study also found evidence that upward social comparison had an indirect mediated effect in the relationship between faculty burnout and teaching anxiety, and between faculty burnout and teaching satisfaction. From these findings, faculty with upward social comparison tendencies might be worsening their teaching anxiety and satisfaction when experiencing burnout in higher education.

Data Availability  The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Conflict of Interest  The authors declare no competing interests.

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