Discerning the Effect of the Relationship Between Disclosure and Responsiveness On Depression, Anxiety, and Compassion Fatigue Among Veterinarians

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Several studies have identified that veterinarians experience more psychological stress such as anxiety, depression, burnout, and compassion fatigue than the general population. Examination of these psychological stressors is important due to their potential impacts on veterinarians’ mental health and even the potential for suicide ideation and suicidality. Identified occupational stressors contributing to psychological stress include practice demands such as high caseload and long working days, practice management responsibilities, professional mistakes, unexpected outcomes, communicating poor news, poor work-life balance, student debt, and client complaints. Less experienced veterinarians appear to be more prone to poor psychological health compared to more experienced colleagues, which may be partially attributed to relative social isolation compared to veterinary school and uncertainty regarding skills and application of their knowledge.

Anxiety and depression

According to the National Institute of Mental Health, depression and anxiety are common mental health concerns affecting millions of adults in the US to varying degrees. Specifically, the American Psychiatric Association defines major depressive disorder as a serious illness causing feelings of sadness persisting for longer than 2 weeks and negatively in-
interrupting daily life. Anxiety disorders are defined by the National Institute of Mental Health as excessive worry for 6 months or longer that negatively impacts the individual’s quality of life.

Workplace stressors are an important risk factor for mental health concerns, especially when combined with absent support from superiors and colleagues. Subsequently, mental health concerns can have a multitude of impacts on the working population including discrimination, reduced productivity, and increased stress-related complications.

**Compassion fatigue**

Compassion fatigue is defined as the existence of both workplace burnout and concurrent, secondary trauma associated with routinely assisting others experiencing traumatic events. Workplace burnout can occur when there is high emotional involvement in one’s work without mitigating factors such as job satisfaction and social support. Compassion fatigue has been recognized in several health-care or helping professions and may be one of the larger issues affecting the mental well-being of veterinarians. Some scholars have made recommendations for reducing compassion fatigue (eg, self-care, professional help, exercise, etc) but did not include social support, disclosure, or responsiveness.

**Coping strategies and disclosure**

Coping strategies can reduce the risks of stress on mental and physical well-being; however, effectiveness can vary by situation. Social support is a commonly utilized coping strategy characterized by the instrumental, informational, and emotional assistance provided by a significant other, family member, friend, or colleague. In this way, disclosure of stressors can allow individuals to receive support and aid others as well as strengthen relationship bonds. However, self-disclosure also allows the risk of unfair treatment, exaggerated reactions, unwanted therapy, and retraumatization. Responsiveness during disclosure appears to be important for determining the emotional intensity of an event, whether pleasant or unpleasant. Specifically, a responsive listener providing verbal feedback has been shown to help unpleasant event memories fade in emotional intensity, while talking with a nonresponsive listener increases emotional intensity.

A commonly reported reason for not self-disclosing mental health concerns is perceived stigma. Veterinarians may perceive high levels of stigma to mental health concerns, similar to other medical health professionals; however, supportive data are scarce. In medical students, some described beliefs include that mental health concerns are an unacceptable weakness and fitness to practice excludes the weak, which de facto excludes people with mental health challenges. Furthermore, some medical students believe that the lack of success in medicine is a failure. Imagined consequences of disclosing mental health concerns include fear of expulsion from the program or profession and reputational damage; similar beliefs could apply to the veterinary profession. Fear of these imagined consequences and stigma may result in individuals concealing depression, anxiety, or other psychological stressors rather than seeking professional help and support. This may contribute to social isolation, generate distress from protecting a secret, increase the degree of loneliness and suffering, and internalize stigma and shame.

Ultimately, the decision to reveal or conceal mental health symptoms in the workplace can be a complicated process. Before any disclosure, the quality of the relationship is assessed and the receiver’s potential reaction is considered. People are more confident in disclosing sensitive health information when the individuals involved have a strong relationship. In the workplace, employees are more likely to share information if the rewards outweigh the potential risks. Disclosure of mental health concerns can improve workplace relationships, foster a friendly and supportive workplace environment, improve well-being, and help individuals experience improved workplace authenticity. Unfortunately, sometimes employees report experiencing social stigma and discrimination after revealing their mental health diagnosis to others, including increased chances of being targets of workplace gossip and strained relationships with their coworkers. Regrettably, disclosure can also hinder advancement opportunities, contribute to poor performance evaluations, and lead to reduced pay and possible termination.

Thus, the act of disclosing mental health concerns does not guarantee improved well-being and places the individual at risk for negative reactions from others. In fact, if the response is viewed as negative, potential rewards are attenuated or reversed.

Computer-mediated communication usage, such as with online support groups, has increased as a result of improved availability of personal computers and internet access. While some studies have reported a negative impact of social media use on well-being among veterinarians (ie, correlation with negative mental health outcomes), other studies have demonstrated that there are many perceived benefits of semiprivate and private online peer support groups. Benefits of online support groups include increased availability, reduced geographic and transportation barriers, increased convenience, and greater accessibility for people with speech or hearing disabilities. Furthermore, people with conditions associated with stigma may find online support to be a more hospitable forum for discussing sensitive issues. Additionally, self-disclosure online can provide multiple benefits, including expanded access to information and resources, connection with peers, and a sense of community, and online spaces can even encourage opportunities to engage in related advocacy efforts. Finally, it appears that online training focused on providing evidence-based emotional support skills (eg, responsiveness) can provide positive outcomes for those who receive the training and provide support, in addition to those who receive the support, whether it be online or offline.

As mentioned, previous studies have used the disclosure responsiveness theory to investigate the
direct relationships between disclosure, compassion, responsiveness, and quality of life outcomes. This study sought to assess the relationships between disclosure and responsiveness on anxiety, depression, and compassion fatigue symptoms. Specifically, we solicited veterinarians from a private Facebook online support group for veterinarians, Not One More Vet (NOMV), to participate in a cross-sectional survey testing our hypotheses. The test hypotheses focused on the effect of responsiveness on disclosure’s relationship with compassion fatigue, as well as depression and anxiety.

Materials and Methods

Survey distribution and response collection
A web-based questionnaire was distributed to all members of the NOMV Facebook (Meta Platforms Inc) private online support group using Qualtrics XM (Qualtrics International Inc). The questionnaire (Supplementary Appendix) collected information on disclosure, perceived responsiveness, compassion fatigue, depression symptoms, and anxiety symptoms. An online approach was appropriate in this context because veterinarians use NOMV as a resource to connect with others. NOMV offers a space for users to seek information and resources as well as receive peer support from others in the profession through posting, liking, and commenting in the private group.27

Procedure
A purposive sample of participants was recruited from NOMV’s Facebook private online support group between the dates of February 12, 2020, through March 11, 2020, and included more than 23,700 veterinarian members worldwide. The group’s administrator was contacted to detail the purpose of the study and discuss the questionnaire, respondent anonymity, and confidentiality. After receiving consent from the group’s administrator and confirmed exemption from the Institutional Review Board, the primary investigator (CR-S) and a co-investigator (CAL) met with the group’s administrator and received permission to begin recruitment. The group’s administrator posted a recruitment message along with the link to the Qualtrics survey to the NOMV private group page. No compensation was offered for completion of the study. To complete the survey, participants were required to be at least 18 years of age, and participants were encouraged to take the survey only once. Since the NOMV group is exclusive to veterinarians, all participants were doctors of veterinary medicine (DVM, VMD, or equivalent).

Participants
A total of 245 veterinarians voluntarily participated in the online survey. Screening questions were included in the study’s demographic questions to ensure only those currently practicing veterinary medicine were included in the sample. Fifteen cases were removed (ie, student or retired from practice), resulting in a sample of 230 included participants. The participants were 94% white, 2% Hispanic, 1% Asian, 2% multiracial, 1% African American, and < 1% Native American. A total of 95% of respondents self-identified as female and 5% as male. Ninety-seven percent of respondents were currently practicing veterinary medicine, 2% were not currently practicing, and < 1% were retired. Of the respondents, 23% had been practicing between 1 to 5 years, 51% between 6 to 15 years, 19% between 16 to 25 years, and 7% for > 30 years.

Measures
Scales were calculated for each variable used in the analyses. To test the validity of the scales, Pearson correlations were used to test the bivariate associations between all variables. Multicollinearity was not indicated. The Kaiser-Meyer-Olkin test and Bartlett’s test of sphericity were also conducted for each variable. Results indicated no problems that would prevent further factor analyses. Principal component analysis was conducted as an additional test of scale validity in the current application.29 Items that did not load were removed from the final scale, as reported in the individual measure’s sections. After removing these items, all variables loaded on a single dimension for the appropriate variable. Thus, scale validity was maintained in the context of veterinarians. Reliability coefficients were determined by calculating Cronbach’s α.30,31 and are presented for each following variable.

Disclosure
This 3-item measure was adapted from the perceived self-disclosure scale of Laurenceau et al32 to be context specific to veterinarians. Participants rated how much they shared information, thoughts, and feelings related to their work-related stressors (eg, “How often do you disclose work-related stressors to others?”). Items were rated on a 5-point scale, with higher scores indicating greater levels of disclosure (1 = not at all, 5 = very much). Internal reliability for the scale was strong (α = .89).

Responsiveness
This 3-item measure was adapted from the perceived responsiveness scale of Laurenceau et al32 and Manne et al33 to be context specific to veterinarians. Participants rated the degree to which they felt accepted, understood, and cared for by others when discussing their work-related stressors (eg, “To what degree do you feel accepted by others when discussing work-related stressors?”). Items were rated on a 5-point Likert scale (1 = not at all, 5 = very much). Higher scores signified an increased perception of responsiveness from others. The coefficient α for the scale was high (α = .89), indicating strong reliability.

Compassion fatigue
This 12-item measure was adapted from the compassion fatigue scale of Adams et al34 to be context specific to veterinarians. Participants rated the degree to which they experienced compassion.
fatigue caused by work stressors (eg, "I have felt trapped by my work"). Items were rated on a 5-point Likert scale (1 = not at all, 5 = very much). Higher scores signified an increased perception of compassion fatigue. Two items from the adapted scale were dropped due to poor loading. The resultant 10-item scale had a high coefficient α (α = .89), indicating strong reliability.

Anxiety
The 7-item measure was adapted from the generalized anxiety disorder scale of Spitzer et al\(^{34}\) to be context specific to veterinarians. Participants rated the degree to which they most often experienced anxiety symptoms related to work stressors (eg, "worrying too much about different things"). Items were rated on a 5-point Likert scale (1 = not at all, 5 = very much). Higher scores indicated increased levels of anxiety symptoms. The coefficient α for the scale was high (α = .91), indicating high reliability.

Depression
The 9-item measure was adapted from the Patient Health Questionnaire scale of Kroenke et al\(^{35}\) to be context specific to veterinarians. Participants rated the degree to which they experienced depressed mood, anhedonia, sleep problems, feelings of tiredness, changes in appetite or weight, feelings of guilt or worthlessness, difficulty concentrating, feelings of sluggishness or worry, and suicidal ideation related to work stressors. Items were rated on a 5-point Likert scale (1 = not at all, 5 = very much). Higher scores revealed increased levels of depression symptoms. The coefficient α for the scale was high (α = .91), indicating high reliability.

Statistical analysis
Preacher and Hayes\(^{36}\) nonparametric bootstrapping method of modeling was used to conduct individual mediation analyses. The SPSS PROCESS macro (version 24; IBM Corp) was applied with responsiveness as a mediator between self-disclosure (predictor) and each of the dependent variables (compassion fatigue, depression, and anxiety). As recommended by Hayes, bootstrapping with 5,000 subsamples was used to calculate bias-corrected 95% CIs for the effects. When the CI does not include zero, statistical significance is indicated. Preacher and Hayes\(^{36}\) bootstrapping criterion was used to determine whether cross-sectional mediation occurred. For further discussion of the superiority of bootstrapping approaches to the Baron and Kenny criteria, see Hayes.\(^{38}\)

Next, the analysis focused on modeling the overall effects of self-disclosure and responsiveness on veterinarians’ compassion fatigue, anxiety, and depression. To evaluate mediation for all dependent variables simultaneously, we performed path analysis using SPSS AMOS software (version 24; IBM Corp). All direct and indirect effects were freely estimated. Error terms of the dependent variables were allowed to covary.

Mediation analysis of cross-sectional data can be ill-advised when the temporal ordering of variables is in question. Responsiveness to disclosure logically happens only after disclosure occurs and so that temporal orientation is not in question. The literature reviewed for this study provides the theoretical foundation for placing self-disclosure before the dependent variables in the mediation analyses. The question of whether lower compassion fatigue, anxiety, and depression symptoms are antecedent to higher levels of self-disclosure is not supported by that theoretical explanation, but findings should be conditioned on the basis of the possibility that the temporal relationships could be reversed.

Results
The relationships between disclosure, responsiveness, anxiety, compassion fatigue, and depression were initially tested using Pearson correlations (Table 1). Based on the extant literature, disclosure should have negative relationships with anxiety, compassion fatigue, and depression.\(^{31,39–41}\) While each of the relationships was negative, only the association with depression symptoms was statistically significant. At this point, because the relationship is tested using basic correlation, it cannot be said whether disclosure leads to lower depression or people with lower depression tend to disclose more to others.

Of particular importance to the mediation analysis is the relationship between disclosure and responsiveness (Table 2). Participants’ perceived frequency of disclosure was positively associated with perceived responsiveness from others. Additionally, responsiveness’s relationships with the dependent variables were checked. Responsiveness had significant negative relationships with anxiety, compassion fatigue, and depression. In other words, disclosure itself had a small association with decreased depression but no significant relationship with anxiety or compassion fatigue. However, respondents who re-

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<th>Table 1—Means, SDs, and Pearson correlation table for independent, dependent, and moderating variables.</th>
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<td>Variable</td>
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<tr>
<td>1. Disclosure</td>
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<td>2. Responsiveness</td>
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<td>3. Anxiety</td>
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<tr>
<td>4. Compassion fatigue</td>
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<tr>
<td>5. Depression</td>
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N = 418.  *
P < .01. **P < .001.
The disclosure did not affect anxiety independent of responsiveness' effect on anxiety. The indirect effect was not significant. The direct effect was not significant, disclosure was not associated with anxiety when responsiveness was accounted for. The disclosure did not affect anxiety independent of responsiveness' effect on anxiety. The indirect effect was significant. Thus, disclosure's effect on anxiety was transmitted through the a and b paths, and responsiveness acted as a mediator of the effect of disclosure on anxiety. A way to understand this result is that respondents who differed by 1 unit on their level of self-disclosure were predicted to report decreased anxiety symptoms by 0.20 units as a result of disclosure's effect on responsiveness and the perception of responsiveness's effect on anxiety.

In the second analysis, disclosure was not associated with compassion fatigue when responsiveness was included in the model. The disclosure did not affect compassion fatigue independent of responsiveness's effect. The indirect effect was significant, indicating that disclosure's effect on compassion fatigue was mediated by responsiveness. Similar to the previous mediation analysis, respondents who differed by 1 unit on their level of self-disclosure were predicted to report decreased compassion fatigue symptoms by 0.18 units due to disclosure's effect on perceived responsiveness and responsiveness's subsequent effect on compassion fatigue.

In the third mediation model, the direct effect was once again not significant, meaning that the data did not support an association between disclosure and depression when responsiveness was accounted for. The indirect effect was significant as the CI of the estimated difference in depression attributable to the a and b paths did not include zero. Therefore, responsiveness mediates the effect of disclosure on depression. Thus, respondents who differed by 1 unit on their level of self-disclosure were estimated to report lower depression symptoms by 0.20 units, accounting for both disclosure's effect on perceived responsiveness and responsiveness's effect on depression.

### Discussion

Our findings provide important contributions to the ongoing discussions regarding the role of disclosure in improving veterinarian mental health. Previous research argues that self-disclosure is a critical process in alleviating stressors and improving well-being.15,20

In this study, a negative, direct correlation between self-disclosure and depression was identified. In other words, as self-disclosure increased, depression symptoms decreased. However, when mediated...
through responsiveness, veterinarians reported improved outcomes in depression, anxiety, and compassion fatigue symptoms. In essence, veterinarians appeared more likely to gain improved mental health outcomes when they perceived validating, caring, and understanding responses to their disclosures. This is consistent with previous findings on disclosure-responsiveness theory.31,39,41

It was predicted that responsiveness would mediate the relationship between self-disclosure and compassion fatigue. This hypothesis was supported. As responsiveness to disclosure was perceived to be more supportive, the negative effects of compassion fatigue decreased. Assisting clients who are experiencing traumatic events leads to burnout and secondary stress, which may lead to veterinarians experiencing mental health crises. Disclosure, whether it be to peers, mental health-care professionals, or close family and friends, can be an effective coping strategy but only when responsiveness is viewed as caring, understanding, and validating. Additionally, these findings mirror what other scholars have found about the role online peer support groups can play in promoting mental well-being.29

As predicted, responsiveness was negatively associated with anxiety and depression symptoms. The indirect effects were also significant and negative in the mediation analysis, meaning that responsiveness mediates the relationships between disclosure and both anxiety and depression symptoms. As a result, disclosure’s effect on anxiety and depression was much stronger when responsiveness was perceived as supportive. Anxiety and depression symptoms are related to negative mental health outcomes that are often experienced in the veterinary profession.3 High levels of depression and anxiety symptoms further foster poor mental health outcomes. As mentioned previously, revealing thoughts and feelings about work-related stressors does not automatically guarantee positive mental health outcomes. Instead, veterinarians should be encouraged to participate in controlled interactions in which feedback is likely to be viewed as validating, understanding, and caring, such as peer support groups. This finding is important because scholars who study disclosure as a therapeutic coping mechanism are likely to misinterpret their results if they do not include perceived responsiveness. More specifically, responsiveness should be examined as a mediator when examining disclosure practices.

In sum, veterinarians who find themselves experiencing symptoms of anxiety, depression, and compassion fatigue may benefit from the opportunity to disclose their concerns. Also, individuals, such as fellow veterinarians, who receive such disclosures from colleagues and peers could benefit from training to respond in a manner that demonstrates understanding, caring, validation, and empathy. Peer support groups should educate group administrators and participants on providing appropriate responses to sensitive disclosures, such as feelings of hopelessness, sadness, and irritability to ensure success.

Yet this problem can and should be addressed by more than peer support groups. Any relief that can be provided through understanding, validating, and caring responses with mental health-care professionals should be encouraged. Schools and colleges of veterinary medicine should also provide training and educational workshops to mitigate the risks of depression, anxiety, and compassion fatigue symptoms. Additionally, professional organizations in veterinary medicine should work to educate organizational members in effective ways to disclose and respond to mental health concerns. The gravity and complexity of the situation surrounding psychological stressors in the veterinary profession requires a multilayered approach to reach vulnerable individuals in multiple communication contexts.

In this study, there are several limitations that need to be addressed. First, because we conducted a cross-sectional survey, the findings represent a snapshot of veterinarians’ experiences. Longitudinal studies are needed to confirm the predictive relationships illustrated in the mediation models, as well as their lasting power. Second, all responses were self-reports from participants, and there may have been a recall bias in selecting the appropriate response. Participants may have failed to accurately recall past events, intentionally withheld information, or provided incorrect responses.44 More qualitative approaches to examining veterinarians’ experiences, such as interviewing, may provide deeper insight into the impact of responsiveness in improving compassion fatigue, anxiety, and depression symptoms. In fact, the next phase of our research into this area will include interviews with veterinarians to provide a deeper, more nuanced understanding of the issues faced and response needed to alleviate mental health concerns. Next, survey responses were only collected from NOMV’s private Facebook group. Future research endeavors can and should use more diverse recruiting tactics to reach a broader audience of veterinarians, as individuals participating in an online support group may be more likely to experience psychological stressors and/or be more willing to disclose such stressors than the total population of practicing veterinarians. Finally, developing, implementing, and testing training materials or educational workshops for veterinarians—akin to materials developed for social and peer support in other health contexts—is certainly warranted.

Additionally, it is unclear whether the emerging COVID-19 pandemic may have impacted responses from the survey participants. In the US, some notable time points acknowledged by the CDC are the following: (1) the first confirmed case of COVID-19 occurred on January 20, 2020; (2) the first COVID-19 death occurred on February 29, 2020; (3) the WHO declared COVID-19 to be a global pandemic on March 11, 2020; and (4) the first statewide stay-at-home order was on March 19, 2020. While COVID-19 was certainly a threat, the SARS-CoV2 virus and future outcomes of the pandemic were largely unknown during the time of data collection (February 12 to March 11, 2020) and therefore had unknown impacts on the survey results.
Overall, the data supported previous findings that veterinarians suffer from significant levels of depression, anxiety, and compassion fatigue. When associated with disclosure, veterinarians indicated decreased depression symptoms but no significant change in compassion fatigue and anxiety symptoms. In other words, discussing work-related stressors with others did not improve mental health outcomes. However, when the relationship was mediated through responsiveness, veterinarians reported experiencing a decrease in deleterious effects and improved well-being. The more participants perceived that responses to their disclosures were validating, understanding, and caring, the lower levels of compassion fatigue, anxiety, and depression symptoms they reported.

In the veterinarian community, more awareness and recognition of mental health issues are needed to mitigate work-related stressors. Minimizing compassion fatigue, depression, and anxiety is a critical step in improving mental health outcomes. Responsive communication provides a framework for better understanding the complexities of disclosing mental health concerns. Health communication scholars, veterinarians, and scholars in related disciplines should prioritize the continued study of veterinarian disclosure practices and mental health concerns.

Acknowledgments

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**Supplementary Materials**

Supplementary materials are posted online at the journal website: avmajournals.avma.org