DOES PUBLIC RECOGNITION, APPRECIATION AND GRATITUDE MITIGATE FEELINGS OF STRESS, ANXIETY AND BURNOUT, AND LEAD TO INCREASED RESILIENCE IN BC RESPIRATORY THERAPISTS DURING THE COVID-19 PANDEMIC?

By

DANIELLE MCDONAGH

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ABSTRACT

**Purpose:** The COVID-19 pandemic created a novel opportunity to examine how public recognition, appreciation and gratitude may mitigate emotional distress in BC respiratory therapists. This study attempts to identify factors that protect healthcare workers during crisis, uncertainty and large-scale transition shock. **Method:** 59 BC respiratory therapists participated in a survey examining the impact of public recognition on Sense of Mattering, Dispositional Gratitude, Resilience, Connection with Coworkers, Connection with Family and Friends and Distress. **Results:** A Pearson correlation analysis was conducted to explore correlations between Recognition, Mattering, Gratitude, Resilience, Connection with Family and Friends, Connection with Coworkers and Distress. This study found positive correlations between Recognition and Sense of Mattering, Sense of Mattering and Connection, Connection and Distress, and Gratitude and Resilience. Gratitude and Resilience were both negatively correlated with Distress. Recognition did not directly correlate with Dispositional Gratitude or Resilience. Other relevant findings were that 13% of respondents found emotional support from immediate supervisors, and 8.5% utilized workplace assistance programs. **Discussion:** Workplaces are encouraging resilience techniques for workers at the individual level. Findings in this study suggest there is also a community and organizational component in fostering resilience. Recognition, appreciation and gratitude from others creates a sense of mattering, which may be an essential component in creating a resilience culture for healthcare workers. Although respiratory therapists appreciated public recognition and gratitude, the “healthcare heroes” narrative may be damaging in the long-term if it silences meaningful dialogue about the increased risk that respiratory therapists face during the COVID-19 pandemic. **Conclusion:** This study indicates public recognition and appreciation play an essential role in creating feelings of mattering at work, leading to a greater sense of connection. The findings highlight the importance of community, social relationships and organizational leadership in facilitating workers' well-being and creating more resilient systems and societies.
# Table of Contents

**Introduction** ................................................................................................................................. 4  
**Literature Review** ......................................................................................................................... 6  
**Method** ........................................................................................................................................ 8  
  - *Participants* ............................................................................................................................... 8  
  - *Procedures* ............................................................................................................................... 8  
  - *Measures* .................................................................................................................................... 8  
**Results** .......................................................................................................................................... 12  
  - Pearson Correlation Analysis .................................................................................................... 12  
  - Repeated Measures ANCOVA .................................................................................................... 18  
  - Linear Regression Analysis ........................................................................................................ 20  
  - Mediation .................................................................................................................................... 25  
  - Two-Tailed Independent Samples t-Test .................................................................................... 27  
**Discussion** .................................................................................................................................... 39  
**Conclusion** ..................................................................................................................................... 42  
**Study Limitations** ......................................................................................................................... 42  
**References** ..................................................................................................................................... 44
Does Public Recognition, Appreciation and Gratitude Mitigate Feelings of Stress, Anxiety and Burnout, and Lead to Increased Resilience in BC Respiratory Therapists During the COVID-19 Pandemic?

Introduction

The COVID-19 pandemic has accelerated a cataclysmic shift in people's lives across the globe. It has exposed vulnerabilities in the economy, global supply chains, social institutions, and value systems and has changed the nature of work, possibly forever. The COVID-19 pandemic also provides a unique opportunity to examine ways to increase resilience in our increasingly complex systems. Widespread system shock and disruption may allow humanity to embrace the values of diversity, care, compassion and solidarity in the face of uncertainty and adversity needed for building a sustainable future (Leach et al., 2020). Resilience is the ability to bounce back from adversity and is shaped by historical and cultural processes. Resilience has multiple applications in various complex systems (Brennan & McGrady, 2015; Kaye-Kauderer et al., 2020; Palmieri, 2016).

A shift in values is highly evident in the "healthcare heroes" narrative and the valorization of those who care for others. The portrayal of nurses as angelic heroes is gendered, stereotypical and has historical roots in moral assumptions surrounding women and care (Stokes-Parish et al., 2020). However, the COVID-19 pandemic created widespread valorization of care and community values. The adoption of communal values marks an abrupt shift from the value system that embraces independence, ambition and self-interest, which is the central paradigm underpinning the neoliberal economy in globalized systems. Embracing the values of care, compassion, community and solidarity are vital components in creating just and resilient societies and workplaces. There is an inherent physical and psychological risk to healthcare workers due to their occupation. The COVID-19 pandemic has both highlighted and exacerbated this risk. Studies worldwide indicate that the COVID-19 pandemic and quarantine caused distress, PTSD, sleep disruption and harmed mental well-being in healthcare workers and the general population (Grabbe et al., 2020; Kimhi et al., 2020; Secosan et al., 2020). The question, "how can we, as a collective, protect ourselves and our healthcare workers from psychological harm and create well-being?" is even more critical as the pandemic continues.
There was a general sense of appreciation for healthcare workers in Canada before the COVID-19 pandemic, most often for doctors and nurses. The COVID-19 pandemic increased the rest of the healthcare team's profile, as workers from multiple disciplines were recognized, thanked and appreciated. One group of relatively unknown healthcare workers, registered respiratory therapists (RRTs), were front and centre in both the care of COVID-19 patients and the media discourse about the ventilator shortages. According to the Canadian Society of Respiratory Therapists (2020), respiratory therapists are a specialized group of healthcare workers that intubate, ventilate, assess and oxygenate patients, among many other roles. The media coverage of ventilator shortages across North America also highlighted a respiratory therapist shortage. Respiratory therapists' public profile increased as the virus spread through Canada in March and April 2020 (CSRT, 2020).

Respiratory therapists work in multiple settings and have numerous roles within the healthcare system. RRTs often work in acute and critical care in the hospital setting and attend to traumas and the critically ill. According to the British Columbia Society of Respiratory Therapists (D. McDonagh, Personal Correspondence, 2020), RRT’s workload is generally overwhelming at baseline, and staffing levels are inadequate in many hospitals in BC. Continuous exposure to other people's trauma and illness and stress form workload and staffing issues increase the risk of occupation-induced moral injury, secondary trauma syndrome (STS), PTSD, and burnout for RRTs (Burr et al., 2020; Epstein et al., 2020; Johnson-Coyle et al., 2016.; Măirean, 2016; Sorenson et al., 2016). The COVID-19 pandemic created even more risk as uncertainty increased for numerous reasons. There was an increased risk to personal and family health, PPE shortages, media reports worldwide showing system failure, accounts of moral injury and distress in healthcare workers, and fear of equipment and personnel shortages.

Fear and uncertainty rapidly spread to healthcare workers and the public worldwide. Interestingly, this led to widespread public recognition, appreciation, and gratitude for healthcare workers. In many parts of the world, including BC, there were tributes from the public at 7:00 pm, where people would bang on pots and pans and cheer for hospital workers. There were drive-by hospital tributes nightly from police, firefighters and paramedics. Other public forms of gratitude included thank you “hearts for healthcare," social media tributes, news reports, gifts, discounts for healthcare workers and the hero narrative development. Respiratory therapists
received widespread public recognition and gratitude for being a vital part of the healthcare team.

This study examines the connection between public recognition and gratitude and BC respiratory therapists' psychological and emotional response during the early stages of the COVID-19 Pandemic from March 15th, 2020 to May 31st, 2020, as respiratory therapists went from being virtually unknown to being "healthcare heroes." This study will provide insight into how society and organizational leadership can mitigate distress and psychological harm for healthcare workers, and may provide mechanisms to create healthy and resilient workplaces in general.

**Literature Review**

The literature review was conducted in May through June 2020, using a combination of searches. An overview of research about the impact of the COVID-19 pandemic was conducted by entering the terms COVID-19 Pandemic and healthcare workers into EBSCO, PubMed, PsycNET and Google Scholar. Early research studies indicated the COVID-19 pandemic causes increased anxiety, stress and depression in nurses and frontline workers in multiple countries, highlighting the need to find factors that increase workers' support and resilience (Luo et al., 2020; Hu et al., 2020).

Next, searches for healthcare workers plus patient gratitude, healthcare worker plus patient appreciation plus burnout plus resilience plus gratitude and compassion fatigue and resilience were conducted using CINAHL, PubMed, PsycINFO Medline and Google Scholar. The research to date indicates frontline healthcare workers face an increased risk of job-related stress, compassion fatigue, burnout and PTSD from their regular work (Aparicio, Centeno, & Arantzamendi, 2019; Burr et al., 2020; Converso et al., 2015; Grabbe et al., 2020; Johnson-Coyle et al., 2016; Sorenson et al., 2016). Being appreciated, understood and valued by other individuals is very important and can be fostered by gratitude and appreciation (Algoe, Haidt & Gable, 2008; Aparicio, Centeno, & Arantzamendi, 2019; Aparicio, Centeno, Robinson et al., 2019). A scoping review on the impact of patient and family gratitude on healthcare workers suggests that healthcare workers are happier and find more meaning in their day-to-day work when they receive thanks and gratitude from patients and their families (Aparicio, Centeno, &
Arantzamendi, 2019). Studies have shown that both state gratitude, resulting from others' kindness and gratitude, and trait or dispositional gratitude, the ability to see and appreciate the positive in situations, increases well-being, meaning, positive emotions, sleep quality and resilience in the recipients. Gratitude lessens death anxiety, decreases burnout and stress and other negative emotions (Cheng, Tsui, & Lam, 2015; Cheng, Wang, & Zheng et al., 2019; Converso et al., 2015; Lau & Cheng, 2011; Măirean, Turluc, & Arghire, 2019; McCullough, Emmons, & Tsang, 2002; Wood & Maltby, 2008; Wood, Maltby, Stewart, et al., 2008).

There is ample evidence in the literature that supports a positive correlation between dispositional gratitude and resilience, and a negative correlation between resilience and burnout (Palmieri, 2016). Some recent studies examine the relationship between gratitude and resilience and the prevention of burnout, moral distress, moral injury, secondary trauma syndrome (STS) and PTSD in healthcare workers (Converso et al., 2015; Epstein et al., 2020; Johnson-Coyle et al., 2016; Palmieri, 2016). Earlier literature focused on individualistic factors, personality traits, self-care and mindfulness training (Brennan & McGrady, 2015; Grabbe et al., 2020; Sorenson et al., 2016). However, there has been a marked increase in examining the importance of organizational culture and leadership in building resilience and mitigating occupationally induced emotional distress (Cheng, Wang, & Zhang et al., 2019; Converso et al., 2015; Epstein et al., 2020; Long, 2020).

The literature to date suggests public recognition, appreciation and gratitude may mitigate the emotional distress in healthcare workers. The largescale outpouring of public recognition, appreciation and gratitude toward healthcare workers during the COVID-19 pandemic is unprecedented. It creates a novel opportunity to study the emotional impact on a previously unknown healthcare group under extreme occupational stress. It will examine whether the gratitude effect holds when healthcare workers' own physical and emotional health is at risk. Specifically, this study examines the influence of recognition and gratitude from the community on the sense of mattering, dispositional gratitude, resilience, social connections, and the depth and impact of psychological distress on a small group of previously unrecognized workers. Given the explicit transition of respiratory therapists from unknown healthcare workers to healthcare heroes, this study will provide insight into the importance of recognition and gratitude. It has far-reaching implications for organizational leadership, communities, families and interpersonal relationships by examining if public recognition, appreciation and gratitude
mitigates feelings of stress, anxiety, burnout and leads to increased resilience in BC respiratory therapists during the COVID Pandemic?

Method

Participants

There were 64 respondents in this study; 59 were retained as they met the inclusion criteria. Namely, they were respiratory therapists employed in BC. One respondent works as an anesthesia assistant (AA). The data from this respondent was retained as AA’s have a similar scope of practice and face a similar level of risk as RRTs. Forty-five of the respondents identified as female, 13 as male and one as non-binary.

Procedures

The literature review took place in May 2020, and the survey was developed using Survey Monkey. The Athabasca University Ethics Review Board granted ethics approval in July 2020. As this was a cross sectional study of BC respiratory therapists, voluntary convenience sampling was used to recruit eligible participants. An invitation to participate in this research study, informed consent and the survey link was emailed through the BC Society of Respiratory Therapists (BCSRT) professional association membership database. The survey invitation and link were posted on BCSRT social media platforms Facebook, Instagram and Twitter, the BCSRT website and the Canadian Society of Respiratory Therapists research webpage.

Measures

The survey was open from August 1st, 2020, to September 2nd, 2020. The twenty-eight-question survey contained demographic questions including gender, occupation and province of employment. A series of Likert scale questions were used to assess and compare respiratory therapists’ emotions, perceptions and affective states from March 15th to May 31st, 2020, compared to before the COVID-19 pandemic. The Likert scale questions were used to develop scales that measured six categories: public recognition and gratitude, a sense of mattering, personal feelings of gratitude or trait gratitude, resilience, distress and connection. Internal validity for each of the scales was assessed with Cronbach's alpha coefficient. The Cronbach's
alpha coefficient was evaluated using the guidelines suggested by George and Mallery (2018) where > .9 excellent, > .8 good, > .7 acceptable, > .6 questionable, > .5 poor, and ≤ .5 unacceptable. The measurement scales were within the good to an acceptable range, except for Connection with Family and Friends, which was in the questionable range.

The Public Recognition and Gratitude Scale consisted of the statements: I think the public has a greater understanding of my profession now compared to before COVID-19 and my profession has been publicly recognized for performing an essential role during COVID-19.

Table 1
Reliability Table for Public Recognition

<table>
<thead>
<tr>
<th>Scale</th>
<th>No. of Items</th>
<th>A</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recognition</td>
<td>2</td>
<td>0.71</td>
<td>0.57</td>
<td>0.84</td>
</tr>
</tbody>
</table>

Note. The lower and upper bounds of Cronbach's α were calculated using a 95% confidence interval.

Dispositional gratitude was measured using a modified version of the "The Gratitude Questionnaire" (GQ-6) constructed and validated by McCullough (2013) and was composed of the following statements: I have so much in my life to be thankful for, if I had to list everything I am grateful for, it would be a long list, I have felt grateful more often than usual during the COVID-19 pandemic, and the reverse coded, when I look at the world, I do not see much to be grateful for, and long periods can go by without me feeling grateful to something or someone.

Table 2
Reliability Table for Gratitude

<table>
<thead>
<tr>
<th>Scale</th>
<th>No. of Items</th>
<th>A</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gratitude</td>
<td>4</td>
<td>0.73</td>
<td>0.61</td>
<td>0.84</td>
</tr>
</tbody>
</table>

Note. The lower and upper bounds of Cronbach's α were calculated using a 95% confidence interval.
Mattering was measured using a Likert scale response to the following statements: my feeling of pride in my profession has increased during the COVID-19 pandemic, and compared to before the COVID-19 pandemic: I feel happier at work now, I am more satisfied with my job, my job is more meaningful and I feel more valued at work.

Table 3

Reliability Table for Mattering

<table>
<thead>
<tr>
<th>Scale</th>
<th>No. of Items</th>
<th>A</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mattering</td>
<td>5</td>
<td>0.79</td>
<td>0.70</td>
<td>0.87</td>
</tr>
</tbody>
</table>

*Note.* The lower and upper bounds of Cronbach's α were calculated using a 95% confidence interval.

The resilience scale was adapted from the Brief Resilience scale by Smith, B. W., Dalen, J., Wiggins, K., Tooley, E., Christopher, P., & Bernard, J. (2008) consisted of a Likert scale for the following statements: I tend to bounce back quickly after hard times and the reverse coded statement, I have a hard time making it through stressful events.

Table 4

Reliability Table for Resilience

<table>
<thead>
<tr>
<th>Scale</th>
<th>No. of Items</th>
<th>A</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resilience</td>
<td>2</td>
<td>0.77</td>
<td>0.65</td>
<td>0.89</td>
</tr>
</tbody>
</table>
The Connection with Family and Friends scale consisted of Likert scale responses to the statements: I have a greater sense of closeness with my friends than I did before COVID-19, and I have a greater sense of closeness with my family than I did before COVID-19. This scale had a Cronbach's alpha coefficient of 0.62, indicating questionable reliability.

**Table 5**

*Reliability Table for Connection*

<table>
<thead>
<tr>
<th>Scale</th>
<th>No. of Items</th>
<th>A</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td>2</td>
<td>0.62</td>
<td>0.45</td>
<td>0.79</td>
</tr>
</tbody>
</table>

The Distress measurement scale was developed using a Likert scale for the following statements: my sense of well-being has decreased during COVID-19, I have felt angrier than usual, I have felt more anxious than usual, I have felt more stress than usual, I have had more difficulty sleeping than usual, I have felt sadder than usual, I have felt more afraid than usual, I have felt more burned out than usual, and my sense of well-being has decreased during the COVID-19 pandemic.

**Table 6**

*Reliability Table for Distress*

<table>
<thead>
<tr>
<th>Scale</th>
<th>No. of Items</th>
<th>A</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distress</td>
<td>8</td>
<td>0.83</td>
<td>0.77</td>
<td>0.90</td>
</tr>
</tbody>
</table>

*Note.* The lower and upper bounds of Cronbach's $\alpha$ were calculated using a 95% confidence interval.

There were also general questions to probe for potential confounding variables, including extreme variance in work schedule and workload and awareness of healthcare worker discounts. There was also a question that determined where people sought emotional support. The final two
questions were open-ended and asked how people felt when they saw public support and whether they had a significant change in their outlook. The results were analyzed using the Intellectus Statistics program (2020). Exploratory Factor Analysis and Structural Equation Modeling was the initial analysis method proposed to explore the variables' relationship. However, the sample size was not adequate to draw reliable conclusions from the data. Instead, a Pearson Correlation was used to assess relationships between the variables. A Baron and Kenny mediation analysis was conducted to determine if resilience mediated Gratitude and Distress's relationship. A repeated measure analysis of covariance (ANCOVA) with one within-subjects factor was conducted to determine whether significant differences exist among Mattering, Gratitude, Resilience, and Distress after controlling for Recognition. Linear regressions were conducted to examine the relationship between two variables. Two-tailed independent samples t-test were conducted to determine whether each category's mean varied by Gender. The results of the open-ended questions will be displayed visually within the results.

Results

Pearson Correlation Analysis

Introduction

A Pearson correlation analysis was conducted among Recognition, Mattering, Gratitude, Resilience, Connection with Family and Friends, and Connection with Coworkers and Distress. Cohen's standard was used to evaluate the strength of the relationships. Coefficients between .10 and .29 represent a small effect size, coefficients between .30 and .49 represent a moderate effect size, and coefficients above .50 indicate a large effect size (Cohen, 1988).

Assumptions

Linearity. A Pearson correlation requires that the relationship between each pair of variables is linear (Conover & Iman, 1981). This assumption is violated if there is curvature among the scatterplot points between any pair of variables. Figure 1-Figure 7 presents the scatterplots of the correlations. A regression line has been added to assist the interpretation.
Figure 1
Scatterplots between each variable with the regression line added

Figure 2
Scatterplots between each variable with the regression line added

Figure 3
Scatterplots between each variable with the regression line added
Figure 4

*Scatterplots between each variable with the regression line added*

![Figure 4 Diagram]

Figure 5

*Scatterplots between each variable with the regression line added*

![Figure 5 Diagram]

Figure 6

*Scatterplots between each variable with the regression line added*

![Figure 6 Diagram]
Results

The correlations were examined using Holm corrections to adjust for multiple comparisons based on an alpha value of 0.05. A significant positive correlation was observed between Recognition and Mattering ($r_p = 0.54$, $p < .001$, 95% CI [0.32, 0.70]). The correlation coefficient between Recognition and Mattering was 0.54, indicating a large effect size. This correlation indicates that as Recognition increases, Mattering tends to increase. A significant positive correlation was observed between Mattering and Connection with Coworkers ($r_p = 0.33$, $p = .010$, 95% CI [0.08, 0.55]). The correlation coefficient between Mattering and Connection with Coworkers was 0.33, indicating a moderate effect size. This correlation indicates that as Mattering increases, Connection with Coworkers tends to increase. A significant positive correlation was observed between Gratitude and Resilience ($r_p = 0.28$, $p = .036$, 95% CI [0.02, 0.50]). The correlation coefficient between Gratitude and Resilience was 0.28, indicating a small effect size. This correlation indicates that as Gratitude increases, resilience tends to increase. A significant negative correlation was observed between Gratitude and Distress ($r_p = -0.34$, $p = .010$, 95% CI [-0.55, -0.09]). The correlation coefficient between Gratitude and Distress was -0.34, indicating a moderate effect size. This correlation indicates that as Gratitude increases, Distress tends to decrease. A significant negative correlation was observed between Resilience and Distress ($r_p = -0.53$, $p < .001$, 95% CI [-0.70, -0.32]).

Figure 7

Scatterplots between each variable with the regression line added
The correlation coefficient between Resilience and Distress was -0.53, indicating a large effect size. This correlation indicates that as Resilience increases, Distress tends to decrease. A significant positive correlation was observed between Connection with Family and Friends and Connection with Coworkers ($r_p = 0.35, p = .007, 95\% \text{ CI} [0.10, 0.56]$). The correlation coefficient between Connection with Family and Friends and Connections with Coworkers was 0.35, indicating a moderate effect size. This correlation indicates that as Connection with Family and Friends increases, Connection with Coworkers tends to increase. A significant positive correlation was observed between Distress and Connection with Coworkers ($r_p = 0.30, p = .021, 95\% \text{ CI} [0.05, 0.52]$). The correlation coefficient between Distress and Connection with Coworkers was 0.30, indicating a moderate effect size. This correlation indicates that as Distress increases, Connection with Coworkers tends to increase. No other significant correlations were found. Table 7 presents the results of the correlations.
Table 7

Pearson Correlation Results Among Recognition, Mattering, Gratitude, Resilience, Connection with Family and Friends, Distress, and Connection with Coworkers

<table>
<thead>
<tr>
<th>Combination</th>
<th>( r_p )</th>
<th>95% CI</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recognition-Mattering</td>
<td>0.54</td>
<td>[0.32, 0.70]</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Recognition-Gratitude</td>
<td>0.23</td>
<td>[-0.03, 0.46]</td>
<td>.080</td>
</tr>
<tr>
<td>Recognition-Resilience</td>
<td>0.07</td>
<td>[-0.19, 0.32]</td>
<td>.606</td>
</tr>
<tr>
<td>Recognition-Connection with Family and friends</td>
<td>-0.10</td>
<td>[-0.35, 0.16]</td>
<td>.458</td>
</tr>
<tr>
<td>Recognition-Distress</td>
<td>-0.21</td>
<td>[-0.44, 0.05]</td>
<td>.118</td>
</tr>
<tr>
<td>Recognition-Connection Coworkers</td>
<td>0.05</td>
<td>[-0.22, 0.30]</td>
<td>.735</td>
</tr>
<tr>
<td>Mattering-Gratitude</td>
<td>0.25</td>
<td>[-0.01, 0.48]</td>
<td>.056</td>
</tr>
<tr>
<td>Mattering-Resilience</td>
<td>0.11</td>
<td>[-0.15, 0.36]</td>
<td>.391</td>
</tr>
<tr>
<td>Mattering-Connection Family and friends</td>
<td>0.11</td>
<td>[-0.15, 0.36]</td>
<td>.418</td>
</tr>
<tr>
<td>Mattering-Distress</td>
<td>-0.20</td>
<td>[-0.44, 0.06]</td>
<td>.130</td>
</tr>
<tr>
<td>Mattering-Connections with Coworkers</td>
<td>0.33</td>
<td>[0.08, 0.55]</td>
<td>.010</td>
</tr>
<tr>
<td>Gratitude-Resilience</td>
<td>0.28</td>
<td>[0.02, 0.50]</td>
<td>.036</td>
</tr>
<tr>
<td>Gratitude-Connection with Family and Friends</td>
<td>0.16</td>
<td>[-0.11, 0.40]</td>
<td>.239</td>
</tr>
<tr>
<td>Gratitude-Distress</td>
<td>-0.34</td>
<td>[-0.55, -0.09]</td>
<td>.010</td>
</tr>
<tr>
<td>Gratitude-Connection with Coworkers</td>
<td>-0.13</td>
<td>[-0.38, 0.13]</td>
<td>.320</td>
</tr>
<tr>
<td>Resilience-Connection with Family and Friends</td>
<td>0.12</td>
<td>[-0.14, 0.37]</td>
<td>.378</td>
</tr>
<tr>
<td>Resilience-Distress</td>
<td>-0.53</td>
<td>[-0.70, -0.32]</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Resilience-Connection with Coworkers</td>
<td>-0.08</td>
<td>[-0.33, 0.18]</td>
<td>.556</td>
</tr>
<tr>
<td>Connection with Family and Friends-Distress</td>
<td>0.21</td>
<td>[-0.05, 0.44]</td>
<td>.120</td>
</tr>
<tr>
<td>Connection Family and Friends-Connection with Coworkers</td>
<td>0.35</td>
<td>[0.10, 0.56]</td>
<td>.007</td>
</tr>
<tr>
<td>Distress-Connection with Coworkers</td>
<td>0.30</td>
<td>[0.05, 0.52]</td>
<td>.021</td>
</tr>
</tbody>
</table>

Note. \( n = 58 \). Holm corrections used to adjust \( p \)-values.
Repeated Measures ANCOVA

Introduction

A repeated measure analysis of covariance (ANCOVA) with one within-subjects factor was conducted to determine whether significant differences exist among Mattering, Gratitude, Resilience, and Distress after controlling for Recognition.

Results

The results were examined based on an alpha of 0.05. The covariate, Recognition, was significantly related to Mattering, Gratitude, Resilience, and Distress, $F(1, 56) = 8.64, p = .005$. The $p$-values for the within-subjects factor and the interactions with the within-subjects factor were calculated using the Greenhouse-Geisser correction to adjust for the violation of the sphericity assumption. According to Greenhouse and Geisser (1959), this is the appropriate way to adjust for violations of the sphericity assumption. The main effect for the within-subjects factor was significant, $F(3, 168) = 3.81, p = .017$, indicating significant differences between the values of Mattering, Gratitude, Resilience, and Distress after controlling for Recognition. The interaction effect between the within-subjects factor and Recognition was significant, $F(3, 168) = 6.10, p = .001$, indicating the relationships between Mattering, Gratitude, Resilience, and Distress differed significantly as the value of Recognition changed. Table 8 presents the ANCOVA results.
Table 8

Repeated Measures ANCOVA Results

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>P</th>
<th>η²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between-Subjects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recognition</td>
<td>1</td>
<td>3.15</td>
<td>3.15</td>
<td>8.64</td>
<td>.005</td>
<td>0.13</td>
</tr>
<tr>
<td>Residuals</td>
<td>56</td>
<td>20.43</td>
<td>0.36</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within-Subjects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within Factor</td>
<td>3</td>
<td>5.98</td>
<td>1.99</td>
<td>3.81</td>
<td>.011</td>
<td>0.06</td>
</tr>
<tr>
<td>Recognition: Within.Factor</td>
<td>3</td>
<td>9.58</td>
<td>3.19</td>
<td>6.10</td>
<td>&lt; .001</td>
<td>0.10</td>
</tr>
<tr>
<td>Residuals</td>
<td>168</td>
<td>87.89</td>
<td>0.52</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Post-hoc. The mean contrasts utilized Tukey comparisons based on an alpha of 0.05. Tukey comparisons were used to test the differences in the estimated marginal means for each combination of within-subject effects.

Within Effects. Mattering was significantly greater than Gratitude, \( t(56) = 12.32, p < .001 \), Mattering was significantly greater than Resilience, \( t(56) = 8.11, p < .001 \), Mattering was significantly greater than Distress, \( t(56) = 6.82, p < .001 \), Gratitude was significantly less than Resilience, \( t(56) = -3.33, p = .008 \), and Gratitude was significantly less than Distress, \( t(56) = -3.13, p = .014 \). No other significant differences were found between Mattering, Gratitude, Resilience, and Distress. Table 9 presents the marginal means contrasts for the Repeated Measures ANCOVA.
Table 9

The Marginal Means Contrasts for each Combination of Within-Subject Variables for the Repeated Measures ANCOVA

<table>
<thead>
<tr>
<th>Contrast</th>
<th>Difference</th>
<th>SE</th>
<th>df</th>
<th>T</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mattering – Gratitude</td>
<td>1.38</td>
<td>0.11</td>
<td>56</td>
<td>12.32</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Mattering – Resilience</td>
<td>1.01</td>
<td>0.12</td>
<td>56</td>
<td>8.11</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Mattering – Distress</td>
<td>0.92</td>
<td>0.14</td>
<td>56</td>
<td>6.82</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Gratitude - Resilience</td>
<td>-0.37</td>
<td>0.11</td>
<td>56</td>
<td>-3.33</td>
<td>.008</td>
</tr>
<tr>
<td>Gratitude – Distress</td>
<td>-0.46</td>
<td>0.15</td>
<td>56</td>
<td>-3.13</td>
<td>.014</td>
</tr>
<tr>
<td>Resilience – Distress</td>
<td>-0.09</td>
<td>0.17</td>
<td>56</td>
<td>-0.51</td>
<td>.956</td>
</tr>
</tbody>
</table>

Note. Tukey Comparisons were used to test the differences in estimated marginal means.

Linear Regression Analysis

Introduction

A linear regression analysis was conducted to assess whether Recognition significantly predicted Mattering.

Results

The results of the linear regression model were significant, $F(1,56) = 22.73, p < .001, R^2 = 0.29$, indicating that approximately 29% of the variance in Mattering is explainable by Recognition. Recognition significantly predicted Mattering, $B = 0.38, t(56) = 4.77, p < .001$. This indicates that a one-unit increase of Recognition will increase Mattering's value by 0.38 units on average. Table 10 summarizes the results of the regression model.
Table 10

Results for Linear Regression with Recognition predicting Mattering

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>95% CI</th>
<th>β</th>
<th>T</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intercept)</td>
<td>2.27</td>
<td>0.23</td>
<td>[1.80, 2.73]</td>
<td>0.00</td>
<td>9.69</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Recognition</td>
<td>0.38</td>
<td>0.08</td>
<td>[0.22, 0.54]</td>
<td>0.54</td>
<td>4.77</td>
<td>&lt; .001</td>
</tr>
</tbody>
</table>

Note. Results: $F(1,56) = 22.73, p < .001, R^2 = 0.29$

Unstandardized Regression Equation: Mattering = 2.27 + 0.38*Recognition

Linear Regression Analysis

Introduction

A linear regression analysis was conducted to assess whether Recognition significantly predicted Gratitude.

Results

The results of the linear regression model were not significant, $F(1,57) = 3.10, p = .083, R^2 = 0.05$, indicating Recognition did not explain a significant proportion of variation in Gratitude. Since the overall model was not significant, the individual predictors were not examined further. Table 11 summarizes the results of the regression model.

Table 11

Results for Linear Regression with Recognition predicting Gratitude

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>95% CI</th>
<th>β</th>
<th>T</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intercept)</td>
<td>1.56</td>
<td>0.23</td>
<td>[1.10, 2.01]</td>
<td>0.00</td>
<td>6.90</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Recognition</td>
<td>0.14</td>
<td>0.08</td>
<td>[-0.02, 0.29]</td>
<td>0.23</td>
<td>1.76</td>
<td>.083</td>
</tr>
</tbody>
</table>

Note. Results: $F(1,57) = 3.10, p = .083, R^2 = 0.05$

Unstandardized Regression Equation: Gratitude = 1.56 + 0.14*Recognition
Linear Regression Analysis

Introduction

A linear regression analysis was conducted to assess whether Gratitude significantly predicted Distress.

Results

The results of the linear regression model were significant, $F(1,57) = 7.03, p = .010, R^2 = 0.11$, indicating that approximately 11% of the variance in Distress is explainable by Gratitude. Gratitude significantly predicted Distress, $B = -0.37, t(57) = -2.65, p = .010$. This indicates that a one-unit increase of Gratitude will decrease the value of Distress by 0.37 units on average. Table 12 summarizes the results of the regression model.

Table 12
Results for Linear Regression with Gratitude predicting Distress

<table>
<thead>
<tr>
<th>Variable</th>
<th>$B$</th>
<th>$SE$</th>
<th>95% CI</th>
<th>$\beta$</th>
<th>$T$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intercept)</td>
<td>3.10</td>
<td>0.28</td>
<td>[2.54, 3.67]</td>
<td>0.00</td>
<td>10.99</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Gratitude</td>
<td>-0.37</td>
<td>0.14</td>
<td>[-0.65, -0.09]</td>
<td>-0.33</td>
<td>-2.65</td>
<td>.010</td>
</tr>
</tbody>
</table>

Note. Results: $F(1,57) = 7.03, p = .010, R^2 = 0.11$

Unstandardized Regression Equation: Distress = 3.10 - 0.37*Gratitude

Linear Regression Analysis

Introduction

A linear regression analysis was conducted to assess whether Gratitude significantly predicted resilience.

Results

The results of the linear regression model were significant, $F(1,57) = 4.69, p = .034, R^2 = 0.08$, indicating that approximately 8% of the variance in Resilience is explainable by Gratitude. Gratitude significantly predicted Resilience, $B = 0.31, t(57) = 2.17, p = .034$. This indicates that a
one-unit increase of Gratitude will increase the value of resilience by 0.31 units on average. Table 13 summarizes the results of the regression model.

**Table 13**

*Results for Linear Regression with Gratitude predicting resilience*

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>95% CI</th>
<th>β</th>
<th>T</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intercept)</td>
<td>1.71</td>
<td>0.29</td>
<td>[1.13, 2.28]</td>
<td>0.00</td>
<td>5.94</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Gratitude</td>
<td>0.31</td>
<td>0.14</td>
<td>[0.02, 0.59]</td>
<td>0.28</td>
<td>2.17</td>
<td>.034</td>
</tr>
</tbody>
</table>

*Note.* Results: *F*(1,57) = 4.69, *p* = .034, *R*² = 0.08

Unstandardized Regression Equation: Resilience = 1.71 + 0.31*Gratitude

**Linear Regression Analysis**

*Introduction*

A linear regression analysis was conducted to assess whether resilience significantly predicted Distress.

*Results*

The results of the linear regression model were significant, *F*(1,57) = 21.41, *p* < .001, *R*² = 0.27, indicating that approximately 27% of the variance in Distress is explainable by Resilience. Resilience significantly predicted Distress, *B* = -0.52, *t*(57) = -4.63, *p* < .001. This indicates that a one-unit increase of resilience will decrease the value of Distress by 0.52 units on average. Table 14 summarizes the results of the regression model.

**Table 14**

*Results for Linear Regression with Resilience predicting Distress*

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>95% CI</th>
<th>β</th>
<th>T</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intercept)</td>
<td>3.59</td>
<td>0.27</td>
<td>[3.05, 4.14]</td>
<td>0.00</td>
<td>13.20</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Resilience</td>
<td>-0.52</td>
<td>0.11</td>
<td>[-0.75, -0.30]</td>
<td>-0.52</td>
<td>-4.63</td>
<td>&lt; .001</td>
</tr>
</tbody>
</table>

*Note.* Results: *F*(1,57) = 21.41, *p* < .001, *R*² = 0.27

Unstandardized Regression Equation: Distress = 3.59 - 0.52*Resilience
Linear Regression Analysis

Introduction

A linear regression analysis was conducted to assess whether Mattering significantly predicted Gratitude.

Results

The results of the linear regression model were not significant, $F(1,56) = 3.81, p = .056$, $R^2 = 0.06$, indicating Mattering did not explain a significant proportion of variation in Gratitude. Since the overall model was not significant, the individual predictors were not examined further. Table 15 summarizes the results of the regression model.

Table 15
Results for Linear Regression with Mattering predicting Gratitude

<table>
<thead>
<tr>
<th>Variable</th>
<th>$B$</th>
<th>$SE$</th>
<th>95% CI</th>
<th>$\beta$</th>
<th>$T$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intercept)</td>
<td>1.21</td>
<td>0.38</td>
<td>[0.46, 1.96]</td>
<td>0.00</td>
<td>3.22</td>
<td>.002</td>
</tr>
<tr>
<td>Mattering</td>
<td>0.22</td>
<td>0.11</td>
<td>[-0.01, 0.44]</td>
<td>0.25</td>
<td>1.95</td>
<td>.056</td>
</tr>
</tbody>
</table>

Note. Results: $F(1,56) = 3.81, p = .056, R^2 = 0.06$

Unstandardized Regression Equation: Gratitude = 1.21 + 0.22*Mattering

Linear Regression Analysis

Introduction

A linear regression analysis was conducted to assess whether Mattering significantly predicted Distress.

Results

The results of the linear regression model were not significant, $F(1,56) = 2.36, p = .130$, $R^2 = 0.04$, indicating Mattering did not explain a significant proportion of variation in Distress. Since the overall model was not significant, the individual predictors were not examined further. Table 16 summarizes the results of the regression model.
Table 16

Results for Linear Regression with Mattering predicting Distress

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>95% CI</th>
<th>β</th>
<th>T</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intercept)</td>
<td>3.01</td>
<td>0.42</td>
<td>[2.17, 3.84]</td>
<td>0.00</td>
<td>7.18</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Mattering</td>
<td>-0.19</td>
<td>0.12</td>
<td>[-0.44, 0.06]</td>
<td>-0.20</td>
<td>-1.54</td>
<td>.130</td>
</tr>
</tbody>
</table>

Note. Results: $F(1,56) = 2.36, p = .130, R^2 = 0.04$

Unstandardized Regression Equation: Distress = 3.01 - 0.19*Mattering

Mediation

Introduction

A Baron and Kenny mediation analysis was conducted to assess if resilience mediated Gratitude and Distress's relationship. To determine whether the data supported a mediating relationship, three regressions were conducted. For mediation to be supported, four items must be met: 1) the independent variable must be related to the dependent variable, 2) the independent variable must be related to the mediator variable, 3) the mediator must be related to the dependent variable while in the presence of the independent variable, and 4) the independent variable should no longer be a significant predictor of the dependent variable in the presence of the mediator variable (Baron & Kenny, 1986). In this analysis, the independent variable was Gratitude, the mediator was resilience, and the dependent variable was Distress.

Results

The following regressions will be examined based on an alpha of 0.05. First, the regression with Gratitude predicting Distress was conducted. The regression of Distress on Gratitude was significant, $F(1, 57) = 7.03, p = .010$. The results showed that Gratitude was a significant predictor of Distress, $B = -0.37$, indicating that the first criterion for mediation was satisfied. Second, the regression with Gratitude predicting resilience was conducted. The regression of Resilience on Gratitude was significant, $F(1, 57) = 4.69, p = .034$. The results showed that Gratitude was a significant predictor of Resilience, $B = 0.31$, indicating that the second criterion for mediation was satisfied. Next, the regression with Gratitude and Resilience predicting Distress was conducted. The regression of Distress on Gratitude and Resilience was
significant, $F(2, 56) = 12.64, p < .001$, suggesting that Gratitude and Resilience accounted for a significant amount of variance in Distress. The individual predictors were examined further. The results showed that resilience was a significant predictor of Distress when Gratitude was included in the model, $B = -0.47$, indicating that the third criterion for mediation was satisfied. The results showed that Gratitude was not a significant Distress predictor when resilience was included in the model, $B = -0.23$, indicating that the fourth criterion for mediation was satisfied. Since all four criteria were satisfied, complete mediation is supported. The results of the mediation are presented in Table 17.

Table 17

*Mediation Results for Distress predicting Gratitude mediated by resilience*

<table>
<thead>
<tr>
<th>Dependent</th>
<th>Independent</th>
<th>$B$</th>
<th>$SE$</th>
<th>$T$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression 1:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distress</td>
<td>Gratitude</td>
<td>-0.37</td>
<td>0.14</td>
<td>-2.65</td>
<td>.010</td>
</tr>
<tr>
<td>Regression 2:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resilience</td>
<td>Gratitude</td>
<td>0.31</td>
<td>0.14</td>
<td>2.17</td>
<td>.034</td>
</tr>
<tr>
<td>Regression 3:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distress</td>
<td>Gratitude</td>
<td>-0.23</td>
<td>0.13</td>
<td>-1.76</td>
<td>.084</td>
</tr>
<tr>
<td></td>
<td>Resilience</td>
<td>-0.47</td>
<td>0.12</td>
<td>-4.04</td>
<td>&lt; .001</td>
</tr>
</tbody>
</table>
Two-Tailed Independent Samples t-Test.

**Introduction**

A two-tailed independent samples $t$-test was conducted to examine whether the mean of Distress was significantly different between the female and male categories of Gender.

**Results**

The result of the two-tailed independent samples $t$-test was not significant based on an alpha value of 0.05, $t(56) = -0.98, p = .333$, indicating the null hypothesis cannot be rejected. This finding suggests that the mean of Distress was not significantly different between the female and male categories of Gender. The results are presented in Table 18. A bar plot of the means is presented in Figure 8

<table>
<thead>
<tr>
<th>Variable</th>
<th>Female</th>
<th></th>
<th>Male</th>
<th></th>
<th>t</th>
<th>P</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M$</td>
<td>$SD$</td>
<td>$M$</td>
<td>$SD$</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distress</td>
<td>2.37</td>
<td>0.72</td>
<td>2.59</td>
<td>0.71</td>
<td>-0.98</td>
<td>0.333</td>
<td>0.31</td>
</tr>
</tbody>
</table>

*Note. N = 58. Degrees of Freedom for the $t$-statistic = 56. d represents Cohen's $d$. 
Two-Tailed Independent Samples $t$-Test

Introduction

A two-tailed independent samples $t$-test was conducted to examine whether the mean of resilience was significantly different between the female and male categories of Gender.

Results

The result of the two-tailed independent samples $t$-test was not significant based on an alpha value of 0.05, $t(56) = 0.43, p = .666$, indicating the null hypothesis cannot be rejected. This finding suggests that the mean of resilience was not significantly different between the female and male categories of Gender. The results are presented in Table 19. A bar plot of the means is presented in Figure 9.
Table 19

Two-Tailed Independent Samples t-Test for Resilience by Gender

<table>
<thead>
<tr>
<th>Variable</th>
<th>female</th>
<th></th>
<th>male</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Resilience</td>
<td>2.29</td>
<td>0.69</td>
<td>2.19</td>
<td>0.78</td>
</tr>
</tbody>
</table>

*Note. N = 58. Degrees of Freedom for the t-statistic = 56. d represents Cohen's d.*

Figure 9

The mean of resilience by levels of Gender
Two-Tailed Independent Samples $t$-Test

Introduction

A two-tailed independent samples $t$-test was conducted to examine whether Gratitude's mean was significantly different between the female and male categories of Gender.

Results

The result of the two-tailed independent samples $t$-test was significant based on an alpha value of 0.05, $t(56) = -3.45$, $p = .001$, indicating the null hypothesis can be rejected. This finding suggests that Gratitude's mean was significantly different between the female and male categories of Gender. The results are presented in Table 20. A bar plot of the means is presented in Figure 10.

Table 20

<table>
<thead>
<tr>
<th>Variable</th>
<th>Female</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M$</td>
<td>$SD$</td>
<td>$M$</td>
<td>$SD$</td>
<td>$t$</td>
<td>$P$</td>
<td>$d$</td>
</tr>
<tr>
<td>Gratitude</td>
<td>1.78</td>
<td>0.63</td>
<td>2.44</td>
<td>0.51</td>
<td>-3.45</td>
<td>.001</td>
<td>1.15</td>
</tr>
</tbody>
</table>

Note. $N = 58$. Degrees of Freedom for the $t$-statistic = 56. $d$ represents Cohen's $d$. 
Two-Tailed Mann-Whitney U Test

Introduction

A two-tailed Mann-Whitney two-sample rank-sum test was conducted to examine whether there were significant differences in Gratitude between the levels of Gender. The two-tailed Mann-Whitney two-sample rank-sum test is an alternative to the independent samples t-test but does not share the same assumptions (Conover & Iman, 1981). There were 45 observations in group female and 13 observations in group male.

Results

The result of the two-tailed Mann-Whitney U test was significant based on an alpha value of 0.05, $U = 123, z = -3.18, p = .001$. The mean rank for group female was 25.73, and the mean rank for group male was 42.54. This suggests that Gratitude's distribution for group female was significantly different from Gratitude's distribution for the male category. The median for females ($Mdn = 1.75$) was significantly lower than the median for males ($Mdn = 2.50$). Table 21
presents the result of the two-tailed Mann-Whitney \( U \) test. Figure 11 presents a boxplot of the ranks of Gratitude by Gender.

**Table 21**

*Two-Tailed Mann-Whitney Test for Gratitude by Gender.*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Female</th>
<th>Male</th>
<th>( U )</th>
<th>( Z )</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gratitude</td>
<td>25.73</td>
<td>42.54</td>
<td>123.00</td>
<td>-3.18</td>
<td>.001</td>
</tr>
</tbody>
</table>

**Figure 11**

*Ranks of Gratitude by Gender.*
Two-Tailed Independent Samples \( t \)-Test

**Introduction**

A two-tailed independent samples \( t \)-test was conducted to examine whether the mean of Mattering was significantly different between the female and male categories of Gender.

**Results**

The result of the two-tailed independent samples \( t \)-test was not significant based on an alpha value of 0.05, \( t(55) = -0.86, p = .396 \), indicating the null hypothesis cannot be rejected. This finding suggests that Mattering's mean was not significantly different between the female and male categories of Gender. The results are presented in Table 22. A bar plot of the means is presented in Figure 12.

**Table 22**

*Two-Tailed Independent Samples \( t \)-Test for Mattering by Gender.*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Female</th>
<th></th>
<th>Male</th>
<th></th>
<th>( t )</th>
<th>( p )</th>
<th>( d )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mattering</td>
<td>3.26</td>
<td>0.79</td>
<td>3.48</td>
<td>0.74</td>
<td>-0.86</td>
<td>.396</td>
<td>0.28</td>
</tr>
</tbody>
</table>

*Note.* \( N = 57 \). Degrees of Freedom for the \( t \)-statistic = 55. \( d \) represents Cohen's \( d \).
Figure 12

*The mean of Mattering by levels of Gender.*

![Bar chart showing mean value of purpose for female and male](chart.png)

**Two-Tailed Mann-Whitney U Test**

**Introduction**

A two-tailed Mann-Whitney two-sample rank-sum test was conducted to examine whether there were significant differences in Connection with Coworkers between the levels of Gender. The two-tailed Mann-Whitney two-sample rank-sum test is an alternative to the independent samples *t*-test but does not share the same assumptions (Conover & Iman, 1981). There were 45 observations in group female and 13 observations in group male.

**Results**

The result of the two-tailed Mann-Whitney *U* test was not significant based on an alpha value of 0.05, $U = 203.5$, $z = -1.75$, $p = .079$. The mean rank for group female was 27.52 and the mean rank for group male was 36.35. This suggests that the distribution of Connection with Coworker for group female ($Mdn = 2.00$) was not significantly different from the distribution of Connection with Coworkers for the male ($Mdn = 3.00$) category. Table 23 presents the result of...
the two-tailed Mann-Whitney $U$ test. Figure 13 presents a boxplot of the ranks of Connection with Coworker by Gender.

**Table 23**
*Two-Tailed Mann-Whitney Test for Connection with Coworkers by Gender*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean Rank</th>
<th>U</th>
<th>z</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>female</td>
<td>male</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connection Coworkers</td>
<td>27.52</td>
<td>36.35</td>
<td>203.50</td>
<td>-1.75</td>
</tr>
</tbody>
</table>

**Figure 13**
*Ranks of Connection with Coworkers by Gender*
Two-Tailed Independent Samples \( t \)-Test

**Introduction**

A two-tailed independent samples \( t \)-test was conducted to examine whether the mean of Connection with Family and Friends was significantly different between the female and male categories of Gender.

**Results**

The result of the two-tailed independent samples \( t \)-test was not significant based on an alpha value of 0.05, \( t(56) = -0.75, p = .454 \), indicating the null hypothesis cannot be rejected. This finding suggests that the mean of Connection with Family and Friends was not significantly different between the female and male categories of Gender. The results are presented in Table 24. A bar plot of the means is illustrated in Figure 14.

**Table 24**

*Two-Tailed Independent Samples \( t \)-Test for Connection with Family and Friends by Gender*

<table>
<thead>
<tr>
<th>Variable</th>
<th>female</th>
<th>male</th>
<th>( M )</th>
<th>( SD )</th>
<th>( M )</th>
<th>( SD )</th>
<th>( T )</th>
<th>( p )</th>
<th>( d )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection with Family and Friends</td>
<td>3.00</td>
<td>0.75</td>
<td>3.19</td>
<td>0.99</td>
<td>-0.75</td>
<td>.454</td>
<td>0.22</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* \( N = 58 \). Degrees of Freedom for the \( t \)-statistic = 56. \( d \) represents Cohen's \( d \).
Figure 14

The mean of Connection with Family and Friends by levels of Gender

Figure 15

Sources of Support
Q27 Please use a couple of words to describe your reaction to public support for healthcare workers during COVID-19.

re cognition, overwhelming, people, uplifting, positive, recognized, work

Thankful, amazing, everyday, appreciated, finally, 7pm, emotional, grateful, support

Q28 Did you experience, or are you experiencing a significant change in your personal outlook during the COVID-19 crisis? Please briefly explain (1-2 sentences)

work, outlook, live, patients, time, want, feeling, yes, change

take, job, will, less, life, family
Discussion

The purpose of this study was to examine the role of public recognition, appreciation and gratitude in mitigating distress in BC respiratory therapists during the COVID-19 pandemic. The restoration of a sense of normalcy, meaning, purpose, and mattering is vital in navigating uncertain times (Walsh, 2020). Creating meaning and integrating trauma is an essential component of resilience and is supported by fostering connection, developing a shared sense of identity, and compassion for others. Patient care suffers when healthcare workers experience emotional distress, moral distress and burnout (Epstein et al., 2020; Long, 2020). Trauma can also provide a sense of transformation. It can create a new appreciation for life, new goals and priorities and more robust social connections (Walsh, 2020). The findings in this study showed a strong correlation between recognition and a sense of mattering for RRTs in BC. A sense of mattering is a vital component in creating meaning in life and is related to a sense of purpose and mental well-being (Epstein et al., 2020). Also, as a sense of mattering increases, a sense of connection with coworkers, friends and family increases. Social connection is essential during periods of fear, uncertainty and isolation. Identification with colleagues is protective against emotional trauma during a pandemic and in times of fear, uncertainty and transition (Long, 2020; Sangal et al., 2020).

The importance of recognition in creating a sense of mattering and fostering connections has profound implications for organizational leadership in healthcare and other organizations. Although mindfulness and resiliency training programs are a vital part of the workplace-created tools to counter occupationally induced psychological, emotional and moral distress, the importance of recognition and appreciation by the community, patients and leadership cannot be understated. Recognition, appreciation and gratitude enhance well-being by ensuring people feel they matter, giving meaning to their lives (Epstein et al., 2020; Sorenson et al., 2016).

Similar to findings in earlier studies, there was a significant correlation between gratitude and resilience in the current study (Algoe et al., 2008; Aparicio et al., 2019; Garrido Vásquez et al., 2020; Palmieri, 2016). Resilience increases as dispositional gratitude increases. This finding supports the implementation of gratitude practices in workplace wellness programs. Similarly, the results of this study also suggest dispositional gratitude decreases feelings of distress, as does
resilience (Bozdağ & Ergün, 2020; Hu et al., 2020; Sangal et al., 2020; Walsh, 2020; Yıldırım & Solmaz, 2020). Although a direct correlation was not demonstrated between Recognition and Gratitude, or Recognition and Resilience, after controlling for Recognition, there were significant variations in Mattering, Gratitude, Resilience and Distress. Also, the results of this study indicated that Resilience mediated the relationship between Gratitude and Distress.

This study did not examine the impact of age or career duration on distress. A recent study of STS and PTSD in American respiratory therapists found that demographics did not influence the incidence of occupationally induced psychological injury. Years worked or whether RRTs primarily worked with adults or children had no impact on rates of STS or PTSD (Burr et al., 2020). In the current study, the only significant finding related to the demographics collected was a substantial variance in Gratitude levels by Gender, as the median for Gratitude in females was significantly lower than in males.

Another interesting finding is that 13% of respondents sought emotional support from their supervisors, which may be an area of interest for further research. There is mounting evidence that organizational leadership, workload, workplace culture, and the values of administrators and clinicians are all factors in developing burnout and related distress (Cheng, Wang & Zhang et al.; 2019; Epstein et al., 2020; Sorenson et al., 2016). Although individual resilience and well-being are predictors of successful coping with stress and hazards, these factors can be enhanced by building a sense of mattering through leadership that strives to recognize and appreciate workers (Kimhi et al., 2020). Interestingly, although respondents faced high levels of distress, only 8.5% of respondents accessed workplace Emotional Assistance Programs, which also suggests room for improvement. The primary source of support was coworkers, friends and family. The level of reliance on coworkers for support also highlights the need for peer-to-peer support training. Some respondents also sought counselling and professional help.

The responses to public support primarily reflected gratitude, appreciation, honour, awe and compassion. Although the response to public gratitude was overwhelmingly positive, there appeared to be some backlash against the "healthcare hero" narrative. Some of the comments indicated a sense of shame as being portrayed as a hero. Further, some respondents described feeling like martyrs. The heroism narrative implies that healthcare workers have a moral obligation or duty to put themselves at risk when taking care of others. It obscures the reality
that during COVID-19, they work in conditions that far exceed the typical risks inherent in their work (Cox, 2020; Stokes-Parish, 2020). Although the hero narrative is well-meant, it may serve to silence meaningful dialogue about lack of PPE, increased workload, burnout, STS, PTSD and moral distress (Cox, 2020; Stokes-Parish, 2020). Making healthcare workers into heroes is not an effective long-term solution in managing an overburdened healthcare system.

The COVID-19 pandemic exposed vulnerabilities within the economic and healthcare system that have profound implications for policymakers and governments in Canada and around the world. The COVID-19 pandemic has highlighted the intersection of health equity, systemic social and economic inequality, and populations. People who face structural inequality have multiple risk factors for increased morbidity and mortality from COVID-19. Those with lower socioeconomic status (SES) may face increased risk from poor nutrition, lack of paid sick time, increased stress, poor access to PPE, inability to access healthcare providers and chronic health conditions (Bowleg, 2020; Lynch, 2020; Milam et al. 2020 Shar et al., 2020). In order to create a sustainable and resilient healthcare system, we must examine the factors that contribute to the risk of disease, both chronic and acute, including COVID-19. A report by the Social Determinants and Science Integration Directorate, Public Health Agency of Canada (2016) examined the impact of socioeconomic health inequalities on healthcare costs. They found that Canada's socioeconomic health inequality costs $6.2 billion annually and accounts for 14% of the total expenditures of physician consultations, prescription medication, and acute care hospitalizations. They also found that Canada's lowest SES group accounts for up to 60% of the healthcare system's direct economic burden at an estimated expenditure of $3.7 billion annually.

Rather than valorizing healthcare workers, we as a society, must address the social factors and social determinants of health that create a significant burden on the healthcare system. Paid sick time for all workers and a permanent, unconditional universal basic income (UBI) are powerful tools in creating equality and minimizing healthcare burden, as poverty is the largest social determinant of health (WHO, 2020). In a report written for the Basic Income Canada Network, authors Pasma & Regehr (2019) have outline three potential models for a basic income in Canada that can be implemented without a considerable increase to taxation and increased cost to the state. Although the “healthcare heroes” narrative is well meant, it may create stress and anxiety for healthcare workers over time, and does not address the systemic factors that contribute to the excessive workload and increased strain on the healthcare system.
Finally, some overall themes emerged when asked if the early stage of the COVID-19 pandemic led to a significant change in outlook. There was no real change for many, yet others spoke of rethinking the importance they placed on work and described feeling like they wanted to slow down, appreciate life, and spend more time with loved ones. Several people were considering changing their lives, changing their profession and pursuing other goals and dreams.

Conclusion

The increased profile of RRTs during the early stages of the COVID-19 pandemic provided a novel opportunity to examine the impact of public recognition and appreciation on a group of previously unknown and, therefore, unappreciated healthcare workers. This research project illustrates the importance of recognition and appreciation, and gratitude on a sense of mattering at work. Although recognition did not directly correlate with dispositional gratitude, resilience, or distress, it has a considerable correlation with a sense of mattering at work. A sense of mattering fosters increased connection with coworkers and family and friends, creating meaning in life, enhancing overall mental wellness. Although the direct link between public recognition and gratitude was not confirmed, this study provided more evidence that gratitude and resilience can mitigate distress and that public recognition, appreciation and gratitude create a sense of mattering for the recipients.

Study Limitations

This study has some considerable limitations. First, it was conducted in August 2020 and asked people to examine their feelings from March 15th, 2020 to May 31st, 2020 and before. There is a possibility that respondents did not recall events as they experienced them. However, given the number of COVID-19 patients had increased in BC in July and are continuing to rise in a more significant second wave at the time of writing, it is unlikely RRTs had stopped experiencing anxiety, distress and uncertainty. This study does not measure the long-term impact, so the duration of mitigating factors is uncertain. The sample size was not adequate to accurately explore the relationship between the variables. Studying the effects of COVID-19 on
respiratory therapists in the middle of a respiratory pandemic likely contributed to the low response rate. Finally, the sample relied on voluntary participation, and people were recruited through the membership database and social media platforms of professional associations. There is the possibility that people who are members of their (voluntary) professional association may be more engaged, find more meaning in their work and are more likely to be grateful.


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https://www.who.int/social_determinants/en/