INVESTIGATING HOW INDIVIDUALS RESPOND TO EFFORTS TO CONTAIN THE COVID-19 PANDEMIC IN NORTHERN ONTARIO: ASSOCIATIONS WITH POLITICAL IDEOLOGY AND PERCEIVED STRESS

by

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Abstract

The COVID-19 pandemic has required individuals to adopt new attitudes and behaviours that promote public health, such as mask wearing, social distancing and vaccination. The current research sought to understanding the factors that influence attitudes and behaviours related to these responses by investigating the association of political ideology and perceived stress on attitudes and behaviours towards COVID-19 in Northern Ontario. Overall, a right-leaning or conservative/libertarian political ideology was associated with decreased support of government measures towards COVID-19, lower levels of perceived concern over COVID-19, and less favorable attitudes and reduced uptake of the COVID-19 vaccine. Additionally, while perceived stress was not found to be related to political ideology, moderate stress was found to be associated with lower levels of perceived severity and concern about COVID-19, and less favorable attitudes towards the COVID-19 vaccine. Implications of the current study are useful for understanding reactions to future pandemics and public health crises.

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1 Chapter 1: Introduction

1.1 General Overview

The coronavirus disease 2019 (henceforth COVID-19) pandemic has become an ever-present disruption to the global society over the past two years, presenting massive challenges for public health in order to overcome the virus (Wang & Tang, 2020). The sudden and unexpected threat posed by the COVID-19 pandemic necessitated unified and swift action from all levels of government, which at times has been accused of bypassing individual rights and freedoms in pursuit of the public good (Flood et al., 2020). Unsurprisingly, many key issues around how to respond and manage the pandemic became controversial and had divided public opinion (Chan & Yuen, 2020). Critically, the acceptance of government actions to limit the spread of the virus, the use of vaccines for treatment, and the overall seriousness with which the pandemic was viewed are in question. Understanding the reasons in this observed division between individual responses is a multifaceted issue, with many possible explanations. Broadly, the cause of individual variation in response can be examined in terms of differences in demographic and individual differences (Volk et al., 2021). Political ideology was explored as a key demographic influencing the divergent response, since the COVID-19 pandemic has become increasingly politically divisive (Calvillo et al., 2020). As well, the perceived risk and the stress brought on by the pandemic was examined due to the fact that stress is largely a result of how personality influences the perception of events (Vollrath, 2001). Together, this research accompanies the vast and growing collection of knowledge surrounding the psychology of individual differences between attitudes and behaviours in response to the COVID-19 pandemic, and strives to allow future comparisons to be drawn in the event of similar public health crisis.

1.2 Timeline of the COVID-19 Pandemic

The virus identified as the *severe acute respiratory syndrome coronavirus 2* (SARS-CoV-2) that causes COVID-19, first emerged in the Wuhan province of China sometime in late 2019 (Keni et al., 2020). The Chinese government took unprecedented measures to attempt to control the virus, resulting in broad travel bans, the quarantine of entire cities with tens of millions of people, and the rapid construction of thousands of entire hospitals in weeks (Hou et al., 2020). However, despite these efforts, the containment was unsuccessful and COVID-19 spread globally (Hou et al., 2020).

As of July 2022, over 4 million cases of COVID-19 had been reported in Canada (Government of Canada, 2020a), with over a quarter of those cases reported in Ontario alone (Government of Ontario, n.d.). These cases have been distributed in 6 distinct waves over the 2-year period (Morris, 2022). The most major of these waves occurred during December 2020 to January 2021, April 2021 to May 2021, and December 2021 to January 2022 (Government of Ontario, n.d.). The peak number of active cases came in January 2022 with over 138 thousand active cases and more than 3000 individuals hospitalized in Ontario. Intensive care unit (ICU) administration peaked during the wave of April 2021, where over 800 individuals tested positive for COVID-19 in the ICU (Government of Ontario, n.d.). As of July 2022, a total of over 42 thousand deaths had been reported across Canada, with over 13 thousand of those deaths in Ontario (Government of Canada, 2020b).

1.3 *COVID-19 Containment Reactions*

Worldwide, countries including Canada, responded by enacting sweeping legislation to combat the pandemic (Government of Canada, 2020a). In Canada specifically, the provincial and federal

governments quickly passed laws meant to slow the spread of the virus and contain new cases, with emphasis on travel restrictions, social distancing, and public health measures (Government of Canada, 2020a). Land travel was restricted between the US – Canada border, which closed to non-essential traffic in March 2019 (MacGregor, 2020). Within Canada, travel was limited between provinces, including mandatory 14-day self-isolation for those who were permitted to travel (Government of Canada, 2020a). International flights from foreign countries were limited largely to Canadian citizens and those returning home (Government of Canada, 2020b). Social distancing restrictions were imposed, limiting the number of people permitted at gatherings and forcing the closure of business and events that were deemed too high risk, such as some places of worship, salons, and restaurants (Nicola et al., 2020). When in public, a distance of 2 meters between those not sharing the same household was mandated. Public health directives were given regarding mandatory mask wearing in most businesses that remained open, where social distancing was not always possible (Government of Canada, 2020a).

In Ontario, during the course of the pandemic, various levels of restrictions were imposed and eased across the province. Mask mandates requiring individuals to be masked in indoor public settings were eased on March 21st, 2022, after being in place for nearly 2 years (Neufeld, 2022). Capacity limits of indoor shopping and dining settings which were reduced for much of the pandemic were lifted almost entirely during February 2022, as well as the proof of vaccination system for non-essential indoor activities such as dining and events (Neufeld, 2022). Restrictions suspending cross-border travel were lifted for fully vaccinated Canadians in early 2022 as well, enabling Canadians to once again travel to the United States by land or air (U.S. Embassy, n.d.).

Vaccination has been another effective strategy to combat COVID-19. The vaccine rollout to contain COVID-19 in Ontario began in December of 2020, with increasing eligibility over time

(Government of Ontario, 2021). Those in long-term care, healthcare, and first line responders, and older individuals were given priority for vaccination before expanding to more widespread eligibility (Vilches et al., 2021). As of July, 2022, over 32 million doses vaccine for COVID-19 were administered to over 12 million individuals, with over 1.5 million of those doses being distributed to individuals in Northern Ontario (Government of Ontario, n.d.).

Despite the efficacy of the COVID-19 vaccine against the disease, a substantial portion of the population chose to not receive it. A vaccination acceptance and uptake rate of 82% was reported, meaning that almost 1 in 5 individuals did not become fully vaccinated (Government of Ontario, 2021). While this rate is relatively high compared to the global uptake rate of the vaccine at only 42%(Q. Wang et al., 2022), it falls short when compared to childhood vaccination rates in Canada, where approximately 95% of children become vaccinated (Schellenberg & Crizzle, 2020). Additionally, only half of the individuals who became fully vaccinated received a booster or third vaccination (Government of Ontario, 2021). This third dose of the vaccine was necessitated due to variants in the COVID-19 virus leading to deceases in vaccine effectiveness over time, rendering only two doses less effective, and many individuals and especially those who were younger did not receive this booster dose (Santavicca et al., 2022). This study sought to explore factors explaining this mitigated response and identify grouping variables of interest.

1.4 *Mixed Reactions and Controversies Surrounding COVID-19*

Many of the issues outlined above surrounding COVID-19 provoked mixed reactions. Government measures taken to limit the spread of the virus such as social distancing, travel bans and mask wearing were often reported to lead to protests and non-compliance in some cases in

both the United States and in Canada (Chum et al., 2021; Haischer et al., 2020). This has also included the idea, largely spread online, that the perceived seriousness of the pandemic has been exaggerated and by the media and by the government (Press & The Canadian Press, 2020). Following this, public opinion on the safety and efficacy of a potential vaccine became divided early on, with growing reports that many may not elect to receive the COVID-19 vaccine when it became available (The Canadian Press, 2020).

Approval of government-imposed public health measures that were implemented to help enforce Public Health recommendations including travel bans, mask mandates, and social restrictions has become a controversial topic between Canadians. Travel bans at the border between Canada and the United States have been controversial since they were implemented in the early stages of the pandemic, and were criticized for restricting rights to mobility (MacGregor, 2020). This movement peaked with protestors blocking the Canada-US Ambassador Bridge, which shut down a quarter of all trade between the two countries for over a week (Sullivan, 2022). Inter-provincial travel bans were also put in place, with one in the province of Newfoundland and Labrador becoming particularly controversial (McKenzie-Sutter, 2020). After an individual from outside Newfoundland was denied the ability to attend a funeral, the case was brought to the Supreme court of Newfoundland, where the court ruled to uphold the travel ban (Supreme Court of Newfoundland and Labrador, 2020). Mask mandates have also become a controversial topic, and many Canadians refused to wear them on the grounds of perceived ineffectiveness, being uncomfortable, or not being worried about catching COVID-19 (Hughes, 2020). As well, social restrictions on groups of people meeting led to large fines for those not in compliance (Gunn, 2020).

Information regarding the safety and efficacy of a potential COVID-19 vaccine also became divisive. In an interview with the Canadian Press early in the pandemic, Canada's chief public health officer, Dr. Theresa Tam, revealed that over 25 percent of Canadians were skeptical and did not know if they would elect to take the COVID-19 vaccine once available (Harris, 2020). Growing numbers of Canadians also indicated that they either did not believe the vaccine would be safe or that a vaccine would be effective at all (Harris, 2020). Some surveys had less optimistic results, with one published in August of 2020 showing that only 32 percent of Canadians would take a vaccine if available (Pelley, 2020).

Following this, the perceived seriousness of the pandemic and the news surrounding it also became a controversial topic. The Association for Canadian Studies initially indicated that Canadians had reduced how seriously they perceived COVID-19, and relaxed regard for government guidelines (Association for Canadian Studies, 2020). This was especially troubling as the same survey found that over half of respondents thought the government was holding back COVID-19 information from the public. A quarter of respondents also believed that the officials had exaggerated the dangers of COVID-19 (Press & The Canadian Press, 2020).

1.5 Understanding the controversy surrounding COVID-19

While variability in behavioural responses and attitudes to crisis between individuals can result from many sources, understanding the causes behind it is critical during public health emergencies when a unified front is necessary. Broadly, both demographic factors and individual differences in personality can be useful lenses through which examining variations in response. Demographic characteristics such as gender, age, ethnic origin, achieved education level, socio-economic status, religious and political views all influence how adversity and changes are

perceived and responded to (Volk et al., 2021). Personality and individual identity play a large role in contributing to responses during times of crisis, and affect coping strategies to stress (Vollrath, 2001). Among these factors, both political ideology (Calvillo et al., 2020; Rothgerber et al., 2020) and perceived level of stress (Campo-Arias & Pedrozo-Pupo, 2022; Lin et al., 2020) have been identified by previous research as accounting for considerable variability in individual responses to COVID-19 and was examined further.

1.6 *The Political Ideology and Individual Variations in Response*

Demographic characteristics are especially useful and commonly used to determine connections to behavioural responses, and can be used to understand differences in individual responses to COVID-19. Political ideology is one variable that can be explored to understand how citizens' worldview may underlie their motivations to adopt behaviours during a major public health crisis (Jost et al., 2009). Political ideology is broadly described as a set of beliefs surrounding the way society ought to be organized and the responsibilities of those in society (Freeden, 2006). Therefore, while political ideology can be categorized as a demographic variable, it encompasses much broader characteristics including individual differences and personality. Thus, political ideology can be a useful and key insight understanding the reasons behind individuals' decisions to listen to or ignore governmental directives as it is the culmination of many downstream variables.

1.7 Conceptualizations of Political Ideology. Multiple understandings of political ideology have been proposed, and are often spoken about in terms of a spectrum or political compass with defined directions (Lester, 1994). Commonly, these directions are often broken down into terms of left- and right-wing political ideologies (Martin & Desmond, 2010). This colloquialism

originates from France during the 1700's, when the public was seated on the left of the room and the aristocrats on the right (Sewell, 1985). Modern interpretations of the left or liberal side of the spectrum revolve around understandings of increased support for progressive policy, more governmental control over social assistance programs such as health care and equality incentives, less individual freedom at the expense of more perceived governmental order, and tendency towards favourable attitudes towards embracing and encouraging change towards a future society that encompasses these values (Conover & Feldman, 1981; Freeden, 2006). Juxtaposing this is the right, or conservative spectrum, that entails embracing traditional values such as maintaining the current order of society, less government intervention and reduced support to public funding government social assistance programs (Graham et al., 2009; Jost, 2017). It is important to note that while reducing this vast spectrum of beliefs to a simple dichotomy is useful in identifying broad patterns of behaviour, many individual differences are lost and it is argued that in the oversimplification predictive validity can be lost (Harman, 2018).

1.8 Personality Characteristics and Political Ideology. Individual differences in personality characteristics can be shown to influence the adoption of political ideology and be affected by that same ideology. In an investigation into predictors of political ideology based on the Big Five personality model, De Neve (2015), found that openness to experience was most likely to predict more liberal or left-wing ideology, while high conscientiousness was related to conservative or right-wing ideology in children (De Neve, 2015). Results in adulthood as well indicate these same patterns, and hold true when measured in multiple countries (Fatke, 2017). Examination with the HEXACO model of personality has revealed similar results: conscientiousness is largely linked to more conservative ideology, while the traits honesty-humility, agreeableness, and openness to experience, were linked to more left-wing or liberal

ideologies (Chirumbolo & Leone, 2010; K. Lee et al., 2005). The directionality of the link between personality and ideology has also been explored. Sibley and colleagues (2012) confirmed a connection between openness to experience and left-wing or liberal ideology, and further suggested that environmental conditions such as perceived safety and security foster the development (or lack of) of left-wing or liberal ideology.

Political ideology can be shown to not only be associated with broad personality traits, but to numerous corresponding behaviours and attitudes. Need for closure is a domain related to an individuals will to quickly achieve a desired outcome and is often linked to less interest in drawn out decisions (Theodorou et al., 2022). Conservative individuals have been linked to lower levels of need for closure (Jost, Sterling, et al., 2017), which is hypothesized to stem from a need for clear and unambiguous solutions to problems (Kossowska & Van Hiel, 2003). Closely related is the domain of tolerance of ambiguity, which conservative individuals have been shown to have lower levels of compared to their liberal counterparts on issues such as climate change (Jessani & Harris, 2018). Additionally, Farmer and colleagues demonstrated that this relationship was bidirectional and could be manipulated; by framing ambiguous issues more clearly, higher levels of support were found from conservatives, while presenting less ambiguous issues as more nuanced increased support from more left-wing individuals in the United States (Farmer et al., 2021). Perhaps what links both concepts of closure and tolerance of ambiguity is the domain of cognitive flexibility, an underlying concept which relates to an individual's ability to adapt to new information and update pre-existing beliefs (Chung et al., 2012). Difficulty in changing beliefs and behaviours has robust connections to political ideology, with conservatives demonstrating generally lower levels of cognitive flexibility than liberals, and particularly those in the extremes of the ideological poles (Zmigrod, 2020). Together, political ideology can predict

and influence individual differences from personality traits to personality-based behaviours and attitudes.

1.9 Political Ideology in Canada and the United States. Understandings of political ideology and their corresponding attitudes and behaviours are inevitably influenced by both country and culture (Freire & Kivistik, 2013). Canadian and American political ideologies are both rooted in in British colonialism, and have long been compared and found to be different in terms of both structure and polarization, while sharing fundamental values and conforming to the same measures of left and right (Gibbins & Nevitte, 1985). One source of differences is that while both operate on a democratically elected system, Canada utilizes a multi-party parliamentary system, while the United States operates on a two-party presidential system (Mainwaring, 2016). Mainwaring (2016) speculates that this naturally leads to a polarizing dichotomy where one side is always dominant over the less popular side, while the necessity of forming coalitions in a multi-party system sidesteps this issue. As well, in the Canadian case, because two of the three main parties (the Liberal Party and the New Democratic Party [NDP]) are on the left of the political spectrum, this unbalance naturally shifts the overall spectrum to the left, placing Liberal supporters in the center and leading to a less polarized system (McGregor et al., 2015). While political polarization does exist in Canada, including right-wing-extremism (Perry & Scrivens, 2016, 2018), the unique combination of the multi-party system and the ideologies of those parties causes Canadian politics to be markedly different from those in the United States.

These differences in the structure and character of Canadian politics mean that Canadians respond quite differently than Americans on similar issues. Lachapelle and colleagues (2012) found that while Canadians' and Americans' political ideology had similar structure when it

came to belief in climate change, the overall polarization was less significant in the Canadian sample. Evidence indicated that while conservatives were less likely to support a belief in climate change, they expressed greater support when compared to their American counterparts (Lachapelle et al., 2012). In an examination of the response to the Syrian refugee crisis, Carlier (2016) found that political ideology played a large role in policy surrounding the amount of refugees to accept, ~~while~~ noting that the Canadian Conservative party supported accepting more refugees than did the Republican party in the United States. The issue of same-sex marriage was as well found to have lower support from those of conservative ideology, however support was higher in Canada when compared to the United States (van der Toorn et al., 2017). As well, Canadians as a whole have been found to be more supportive of policies that favour government control and police intervention, compared to Americans (Grabb & Curtis, 1991), which is a traditionally liberal or left-leaning value. Together, these results demonstrate that while strong similarities exist between the political spectrums in Canada and the United States, less polarization and a more moderate right side prevails in Canada.

1.10 Political Differences between Canadian Provinces. As introduced above, the Canadian political landscape is a multi-party system biased towards the left of the political spectrum owing to the makeup of the three main parties, the Liberals, the Conservative Party of Canada, and the New Democratic Party (NDP). However, over 20 political parties are registered at the federal level and dozens more have been present in the past (Elections Canada, 2022). Ferris and Voia (2020) postulate that this competition between parties strengthens and encourages growth in the political system, as well as driving progressive change in platforms and discouraging partisanship among the population. The multitude of parties present allows for regional expression of preferences, and is seen when examining the makeup of the House of Commons

from a provincial level. Specifically, the western provinces have long been considered conservative strongholds and have a larger percentage of conservative voters than other provinces (House of Commons of Canada, n.d.). Such a diversity in regional political preferences is demonstrated in left/right measures of ideology as well, corresponding to higher right-wing political preferences in western provinces (Bjørnskov & Potrafke, 2012). The authors hypothesize that this result stems from historical issues including economic measures such as taxation and government involvement in business (Bjørnskov & Potrafke, 2012).

Because political preferences in Canada are greatly influenced by region, the province of Ontario can be examined from a regional lens as well. Ontario is the most populous province in Canada (Statistics Canada, 2022), and has a unique political history due to its rapid change as the main population centre of Canada. Indeed, for much of the province's history, the largest voting base included those in rural populations, and it was not until the 1980's with the increasing urbanization of the province that the Liberal party started to gain more footing (Encyclopedia Britannica, 2022). This urbanization coincided with decreased reliance on manufacturing and natural resource extraction jobs, all culminating in rapid change in the political makeup and priorities of the province (Rubin, 2017). This change was felt especially for those in Northern Ontario who relied on these industries more than others (Bray & Thomson, 1996), and has led to a unique political landscape not seen in other rural areas in the province. During the 2021 election, Northern Ontario mainly voted for the Liberal and NDP parties, while other rural areas were more likely to vote for conservative candidates (CBC, 2021), indicating a unique political ideology present in Northern Ontario.

1.11 Political Ideology and COVID-19. Political ideology often has a profound impact on response to government directives and adherence to COVID-19 guidelines. Generally, conservative values are more likely to be associated with anti-government sentiments and the opposition of interferences in the forms of taxes, laws and other restrictions (Fontenla, 2016). Social distancing guidelines, mask wearing, and limiting gatherings to smaller group were less likely to be followed by conservatives surveyed in the United States (Hamilton & Safford, 2020; Rothgerber et al., 2020). This can be explained by conservative beliefs, as COVID-19 restrictions like social distancing were perceived as violations of civil rights and liberties (Studdert & Hall, 2020). Conservatives were found more likely to be concerned about the economy opening back up too slowly than other issues (Fairchild et al., 2020). Recently, Choma and colleagues (2021) built on this finding in a comparative study across the United States, Canada and the UK. While results indicated that conservative ideology was a significant predictor of less support for government measures to control COVID-19, the magnitude of this and other related effects was significantly reduced when the sample from the United States was compared to the Canadian counterpart (Choma et al., 2021). One explanation posited for this finding was that Canada may be experiencing less political polarization than the United States, resulting in less influence of political partisanship on behaviours and attitudes relating to COVID-19 (Choma et al., 2021; Merkley et al., 2020). Together, these results demonstrate that even though political ideologies influences both behaviour and attitudes towards following COVID-19 guidelines and conservative ideology in particular is associated with reduced compliance, Canada must be considered unique and distinct from the United States in understanding the effects.

Importantly, political ideology influences how vaccines are viewed and may be linked to the rise of popular anti-vaccine beliefs (Baumgaertner et al., 2018). Anti-vaccination is an alarming trend in the tendency to not believe in the effectiveness of vaccination, even going so far as to speculate that vaccines cause novel diseases (Kata, 2010). While vaccination has largely been proven to be a safe and effective way to prevent disease (Smith et al., 1984), anti-vaccination beliefs persist (Hussain et al., 2018). While most Canadians choose to become vaccinated against common disease, a growing number believe that vaccines are not entirely safe. Dubé and colleagues found that 37 percent of Canadians surveyed believed a vaccine could give them the disease it was meant to protect against, and 20 percent believed it could lead to autism (Dubé et al., 2016). Beliefs around vaccination become politically driven when laws for mandatory vaccination come into effect (Schwartz, 2012), and are often linked to right-wing political values like freedom/liberty (Amin et al., 2017; Rossen et al., 2019). Accordingly, anti-vaccine beliefs were found more commonly among conservatives surveyed in the United States (Baumgaertner et al., 2018). Sarathchandra and colleagues (2018) found a similar result in the development of a scale to measure anti-vaccination attitudes, and fond that the largest predictor of these attitudes beyond conspiratorial thinking was a conservative political ideology.

Over the course of the COVID-19 pandemic, the rate of acceptance of the vaccine was, at one point in time, as low as 60% worldwide (Sallam, 2021). Canadian vaccine acceptance rates have fluctuated throughout the pandemic, ranging from 68% (Taylor, Landry, Paluszek, Groenewoud, et al., 2020), 80% (Lazarus et al., 2020), to 93% (Aw et al., 2021). Various hypotheses have been proposed for understanding this variation in response, ranging from confidence in the vaccine, reduced perceived seriousness of COVID-19, and demographic factors including political ideology (Gerretsen et al., 2021). Kreps and colleages (2020) found that self-identified

Democrats in the United States were significantly more likely (regression coefficient, 0.12; 95% CI, 0.08-0.16) to report acceptance of the vaccine than republicans (regression coefficient, 0.05; 95% CI, 0.01-0.09). A similar finding was reported by Benham and colleages (2021) using a Canadian sample, where over half of the participants expressed some level of vaccine hesitancy, and non-Liberal-Party political ideology was significantly associated with this hesitancy. Additionally, they reported that vaccine hesitancy was associated with individuals' distrust of government institutions (Benham et al., 2021).

Political ideology has been demonstrated to contribute to belief in online misinformation and conspiracy surrounding COVID-19 (Rothgerber et al., 2020). With the dominance of COVID-19 in the news cycle (Stainback et al., 2020), misinformation about the disease has spread on social media (Kouzy et al., 2020). COVID-19 conspiracy theories have become common on Twitter, due to the user-generated nature of the contents and the inability of the platform to fact-check posts shared by users (Cuan-Baltazar et al., 2020). As well, the ability to read and parse the truth of the mass of information available online has been shown to be politically dividing (Swire et al., 2017). Specifically, conservatives have been found to be more susceptible to misinformation than their liberal counterparts (Pennycook et al., 2020). A possible driving factor of this susceptibility was that perceptions of the threat posed due to COVID-19 were lower in conservatives compared to more liberal respondents (Calvillo et al., 2020). Even more troubling is that conservative news outlets have been shown to be part of the problem in spreading misinformation around COVID-19 (Motta et al., 2020; Uscinski et al., 2020).

To examine the reasoning behind COVID-19 misinformation online, Griffith and colleagues (2021) conducted a content analysis of tweets regarding the COVID-19 vaccine in Canada. They found that among other contributing factors, suspicion about the political motivations of those

promoting the vaccine were a top concern. Similarly, results from Twitter analyses conducted in the United States revealed that those on the fringes of the political spectrum, and specifically from conservative ideologies, were the highest predictor of anti-science views regarding COVID-19 (Griffith et al., 2021). Misinformation is also often difficult to prevent from spreading online, and Gruzd and Mai (2020) found that a single Tweet was spread by conservative politicians and twitter users rapidly across the platform, underscoring the difficulty of containing conspiracy thinking. Experimentally, Carey and colleagues (2022) demonstrated that by providing a fact check for false claims to users on social media, they were able to decrease acceptance of the misinformation. As well, the fact check was found to be more effective in those who were identified as a population vulnerable to misinformation (e.g., Trump supporters in the United States) (Carey et al., 2022).

Political ideology can be demonstrated to be a driving factor when it comes to understanding variation in responses to COVID-19 measures. There is growing evidence that conservative or right-wing values are linked to opposition of measures such as social distancing (van Holm et al., 2020), limited acceptance and uptake of the COVID-19 vaccine (Pennycook et al., 2021), and the spreading and susceptibility to misinformation surrounding COVID-19 (Romer & Jamieson, 2020). While some research has been conducted on these effects in Canadian samples, more information is needed when it comes to identifying these populations and the driving forces behind them. The perception of the threat of the COVID-19 pandemic will be explored below in relation to political ideology and how this may be associated with and help explain the motivation behind these behaviours and attitudes.

1.12 Political Ideology and the Perception of Threat. The perception of a situational threat is critical to all behavioural reactions to change, and can be shown to differ substantially as a function of political ideology. Broadly, threat perception is based on the evaluation of an environmental change and the subjective risk that it is determined to pose (Slovic, 1987). This judgment is based on numerous factors, not limited to evaluations and the threat level (Bavel et al., 2020), and the perceived susceptibility or vulnerability to the threat (Cole et al., 2013). These and other factors are then ultimately conceptualized as a feeling of the overall level of risk that the perceived threat poses, influencing compensatory behaviours to mitigate the threat (Weinstein, 1993). Health psychology has long utilized this framework in understanding and manipulating pro-health behaviours, from attempting to promote good dental health (Panic et al., 2014), to the cessation of smoking (Wong & Cappella, 2009).

As well as normal preventative health behaviours, understandings of threat perception can be effective in times of public health crisis. Proximal threat has been shown to be critical to understanding behaviour towards diseases such as SARS (De Zwart et al., 2009) and chronic wasting disease (Vaske et al., 2018), leading to increased evaluations of the threat level as a function of how close individuals believe they are to the source. In previous pandemics, such as the H1N1 virus, this threat perception was positively linked to individuals seeking out pro-health measures such as vaccines (King et al., 2016). However, the reverse of this effect is also critical; as this perceived proximity decreases, individuals experience less perceived threat and are quicker to discount future related threats (Sharot, 2011).

Threat perception can also be shown to be influenced by authoritarian or right-wing political ideologies. Perceived threat has been correlated with activation of authoritarian ideologies (Feldman & Stenner, 1997). In a study of the after effects of the 9/11 terrorist attacks,

Hetherington and Suhay (2011) found that higher perception of the threat was linked to right wing and authoritarian attitudes. Experimentally, Russo and colleagues (2020) demonstrated that not only do right-wing or libertarian individuals have an increased perception of societal threat, but that this increases their preferences for authoritarian systems of government.

In the case of COVID-19, threat perception is also linked to differential responses according to political ideology. Calvillo and colleagues (2020) found that right-wing conservativism was linked to individuals perceiving COVID-19 news as less threatening, and were less likely to be able to tell genuine information apart from misinformation. As well, van Holm and colleagues (2020) found that political ideology shaped COVID-19 related behaviours, with liberals more likely than conservatives to follow directions from government authorities. As a risk avoidance behaviour, vaccination was also found to be influenced by political ideology, with those who identified as more conservative being less likely to become vaccinated (Latkin et al., 2021). Together, there is presently growing evidence that right-wing political ideology can influence the perception of threats in a number of circumstances, and that COVID-19 may activate this threat response.

1.13 Perceived Stress

Closely linked to the concept of perceived risk and threat is the construct of perceived stress (Rapee, 1997). Stress is an evolutionary adaptation that facilitates physiological and behavioral response due to changes in the environment (Yaribeygi et al., 2017). This response generally warns of an impending danger, activating behaviours to counteract the stress and ensuring survival (Negrão et al., 2000). The changes that stress can promote in humans are diverse, influencing everything from mood, learning and memory, immunological functions, and food

consumption (Cohen et al., 2007). As such, stress is a powerful aversive force that is capable of initiating and driving behaviour to alleviate the source of the stress (Dymond & Roche, 2009). The concept of stress is critical to understanding why an individual who perceives a threat may in turn decide to act on it, as the requisite level of stress is critical to action and becomes a driving motivator (Hollon et al., 2015).

Stress can be broken into two broad categories, acute and chronic stress (Silberman et al., 2003). An acute stressor is an event that triggers the body to produce the fight or flight hormone adrenaline, causing increased heart rate and feelings of danger until the stress passes. However, over time, if the stressor is not resolved or is activated too often, chronic stress may develop (Juster et al., 2010). Chronic stress causes this increased sense of danger to continue indefinitely, leading to the risk of toxic side effects due to high levels of stress hormones accumulating in the body (Cohen et al., 2012). Physically, these effects can lead to numerous problems, including immune suppression, cardiovascular issues, sleep disturbance and many others (Schneiderman et al., 2005). Psychologically, the effects can be just as damaging, with symptoms of mood disturbance, difficulty concentrating, anxiety, depression and socialization problems (McEwen, 2007). Public emergencies and outbreaks of disease are well-documented as sources of chronic and acute stress, and below the evidence for COVID-19 as a novel stressor will be examined.

1.14 *COVID-19 and Perceived Stress*

COVID-19 has become a chronic psychological stressor for evolutionary, economic, and social reasons. Fear of disease is an evolutionary stress that can cause avoidance behaviour in some individuals and disease symptoms in others (Oaten et al., 2011). Economically, COVID-19 has the potential to be one of the greatest threats to world GDP since the great depression, and many

have lost jobs leading to financial instability (Nicola et al., 2020). As well, social distancing guidelines and closures of many gathering places have led to increased levels of stress resulting from this social isolation, with many unable to visit family and friends as often as before (Banerjee & Rai, 2020).

COVID-19 can be shown to activate the evolutionary stress of the fear of disease. Humans' evolutionary history has included many diseases and pathogens (Woolhouse & Gaunt, 2007). The process of natural selection favours those who can differentiate between the sick and the healthy in order to avoid catching diseases (Armelagos et al., 2005). Those who are sick nearby activate a powerful disgust reaction, and this stressor can cause behavioural response to mitigate avoidance of disease (Oaten et al., 2011). In the case of COVID-19, symptoms can include visible signs of sickness such as fever and cough (Guan et al., 2020). However up to half the cases are asymptomatic, with no visible symptoms (Gao et al., 2020), potentially leading to the fear of disease being activated by anyone perceived as originating from a place where the disease is spreading (Troisi, 2020). These individuals may be seen to be a higher risk of carrying COVID-19, drawing undue discrimination and heightening the perception and fear of disease spreading (Devakumar et al., 2020; Oaten et al., 2011).

As well, COVID-19 has become a stressor due to its influence on world economic activity (Nicola et al., 2020). Although the situation is not as bad as initially feared, millions of Canadians have applied for governmental assistance due to COVID-19 (Thevenot, 2020). The world economy has impacted the Canadian dollar as well, which has lost comparative value and reduced national gross domestic product (GDP; Mikola et al., 2020). Due to these factors, many are worried about their financial situation and job security (Cousins, 2020). Worries about job security are a cause of chronic stress and are shown to be associated with negative mental health

outcomes (Ferrie et al., 2002). These concerns contribute to the uncertainty of how and when the pandemic will resolve and leave many continually worried about their financial future.

COVID-19 has also become a stressor due to the necessity of social isolation. COVID-19 is a airborne pathogen that spreads via expelled mucus droplets during talking or breathing (Bahl et al., 2022). Thus, government measures aimed at stopping the spread of COVID-19 have primarily focussed on limiting face to face interaction between individuals (Adolph et al., 2020). However, this strategy has the drawback of reducing the amount of contact many have with their friends and family. Extended social isolation has long been observed to cause a host of negative effects on individuals (Abad et al., 2010). These range from psychological effects such as increased levels of anxiety and depression (Asmundson et al., 2020), to physiological changes such as weight gain (Zachary et al., 2020). As well, long-term isolation and loneliness that occur during an extended lockdown can be linked to an increased risk of all cause mortality (Holt-Lunstad et al., 2015)

Stress is a fundamental part of how humans respond to changes in their environment (Yaribeygi et al., 2017), and is highly aversive and capable of initiating and maintaining avoidance behaviours to reduce it (Dymond & Roche, 2009). As such, chronic stressors that continue unabated for long periods can cause damage, including numerous diseases and disorders (Juster et al., 2010; Schneiderman et al., 2005). The chronic stress associated with COVID-19 can be viewed from an evolutionary, economic and social perspective. COVID-19 activates the evolved fear of disease (Troisi, 2020), and may contribute to discrimination due to asymptomatic transmission (Devakumar et al., 2020).

Emerging evidence indicates that COVID-19 can be shown to be a measurable source of stress. Abbas and colleagues (2021) examined stress levels in the medical workers early in the COVID-19 pandemic and found higher than normal levels of perceived stress in respondents. Similarly, Sinta and colleagues (2020) reported survey results comparing participants' worries about COVID-19 and stress and found significant elevations in stress levels. Behaviourally, Yılmazbaş and colleagues (2021) found that those with the highest stress levels were more likely to report willingness to receive the COVID-19 vaccine compared to those with lower levels of stress related to the pandemic. Other stress related behaviours such as increased food consumption (Carroll et al., 2020), weight gain from home confinement (Bhutani & Cooper, 2020) and heightened anxiety and depression (Li & Lyu, 2021) have been linked to the perceived stress of the COVID-19 pandemic. Together, these initial studies demonstrate a solid framework for the current research to examine the role of stress and the attitudes and behaviours around the COVID-19 pandemic.

1.15 The Present Study

COVID-19 is a unique event that requires unprecedented steps by government and individuals to manage it (Gates, 2020). The objective of the present study was to examine how individual differences in political ideology and the perceived stress associated with COVID-19 are linked to attitudes and behaviours towards COVID-19. For the purpose of the present study, these dependent variables were broken into the categories of support of government measures, perceived seriousness of COVID-19, and vaccine hesitancy. Government measures were defined as the reported agreement with issues of government COVID-19 travel restrictions, public health guidelines, business regulations, financial support, and preparedness for a pandemic. Perceived seriousness of the pandemic was defined as reported agreement with statements on: importance

of following public health guidelines, risk of the pandemic, and perceived exaggeration of COVID-19 in the media. Vaccine hesitancy was defined as reported agreement with statements about: the benefits and risk of vaccines, intention to take a COVID-19 vaccine, beliefs about mandatory vaccination.

The current study hypothesized that those with higher perceived stress would be more likely to support COVID-19 government measures and vaccines, because these are both means of managing and removing stress due to the pandemic (Bhutani & Cooper, 2020; Carroll et al., 2020). It was also hypothesized that political ideology would be associated with differences in approval of government measures and beliefs around COVID-19 related issues, because there is evidence that those with a conservative/libertarian ideology are less likely to support government policy (Rothgerber et al., 2020), to believe more in online misinformation surrounding COVID-19 (Motta et al., 2020), and to show lower support for vaccination (Baumgaertner et al., 2018). These hypotheses were based on the predictions that individuals who score higher on the right of the political spectrum (i.e., conservatives/libertarian ideology) would be less likely to support government policies surrounding COVID-19 due to infringements on their freedoms and beliefs that government control should be limited. As well, the seriousness with which one views the pandemic largely depends on what information one is exposed to and believes in, and because conservative individuals are more likely to be susceptible to misinformation, they may believe that COVID-19 was being overblown. Similarly, it was expected that individuals on the right side of the political ideological spectrum would have lower levels of support for COVID-19 vaccination due to beliefs that the vaccine is harmful and have lower levels of trust in government mandated vaccination.

While the ever-changing nature of the COVID-19 pandemic makes study design difficult with many other researchers concurrently examining the same topic, the current research was designed in order to maximize comparability to other similar work using common and well-validated measures. The results of the current study are expected to help further understanding around how both political ideology and stress shape decisions in times of public health crisis, now and in the future.

2 Chapter 2: Materials & Methods

2.1 Participants

Participants included students recruited from Laurentian University and members of the Greater Sudbury area selected by convenience sampling. The goal of achieving 400 participants was initially set, to ensure sufficient statistical power (0.80) and acceptable margin of error (± 4% at the 95% confidence level) for the study using the computer software G-Power (Erdfelder et al., 1996). The total number of participants recruited and included in the analysis of the final sample was 382, within acceptable margins of this goal. All participants were voluntary, and recruited via online Facebook posts identifying as a Laurentian university student research project (see Appendix E - Recruitment Advertisement).

2.2 Materials

The survey questionnaire (see Appendixes A through E) contained a combination of unique questions developed for the purpose of the study (see **bold** items in Appendixes A through E) , combined with the Cohen Perceived Stress Scale (PSS; Cohen, 1994), the Libertarianism-Totalitarianism Scale (Mehrabian, 1996), and the Vaccine Hesitancy Scale (Shapiro et al., 2018). The remainder of the survey was designed to assess the degree to which political ideology and perceived stress are related to how an individual responds to various issues surrounding the COVID-19 pandemic. In total, the survey contained 66 items, broadly grouped into four categories: demographics, political orientation, perceived stress, and questions related to COVID-19.

2.3 *Demographics*

Age, gender, ethnic origin, education level, and employment were assessed to determine the diversity of the sample and any correlation to other factors being measured. As well, an additional question to determine any pre-existing conditions that would cause greater risk to COVID-19 was asked in order to determine if this variable causes a confounding effect on other measures (see Appendix A all demographic questions).

2.4 *Political Orientation*

Political orientation (see Appendix B) was assessed using two approaches: self- identification, and the Libertarianism-Totalitarianism Scale (Mehrabian, 1996). Self- identification asked participants which political party would be their first choice to vote for, as well as a follow-up question asking who their second choice would be. The choices given to participants for this question were limited to the Progressive Conservatives, Liberals, NDP, and Green parties to simplify the analysis. Following this, participants were asked to complete the Libertarianism-Totalitarianism Scale which consists of 20 questions on dividing political issues. Reliability was good, $\alpha = .81$ (Mehrabian, 1996).

Based on these questions, participants were given a total score for totalitarianism based on items 2, 3, 4, 6, 9, 10, 11, 12, 15, 17, 18, and 20, with statements such as “Government must limit our individual freedoms so as to prevent unchecked selfishness, greed, and immorality” and for libertarianism based on items 1, 5, 7, 8, 13, 14, 16, and 19, with statements such as “As a government gets bigger and more powerful, its citizens become poorer and less free.” These items were presented on a 7-point Likert scale, with 7 indicating “very strong agreement”, and 1 indicating “very strong disagreement”. The combined scale yielded total score of 140 points,

with higher scores relating to more conservative/libertarian values.

2.5 *Perceived Stress (PSS) Scale*

Perceived stress (see Appendix C) was determined by inclusion of the PSS, version 10, developed by Cohen. Briefly, the PSS-10 is commonly used in the social and health sciences to measure the perception of stress. The scale was initially developed with 14 items, was later revised and shortened to a 10-item scale that includes general questions that asks participants about their feelings of stress in the past month. An example of an item on this scale was 'In the last month, how often have you found that you could not cope with all the things that you had to do?' These items were presented on a 5-point Likert scale, with 0 indicating 'Never', and 4 indicating 'Often'. Overall, the scale has achieved good internal consistency reliability ($\alpha = .78$) across diverse populations and uses easy to understand language (Baik et al., 2019; E. H. Lee, 2012). Participants' responses were totalled for a cumulative stress score, and ranked into three categories: low stress (score of 0-13), moderate stress (scores of 14-26) and high stress (scores of 27-40). These categories were determined based on the table of norms provided with the scale as described by Cohen.

2.6 *COVID-19 Questions*

A questionnaire relating to COVID-19 was developed to measure four main variables of interest: (1) approval of government measures, (2) perceptions of the seriousness of COVID-19, (3) beliefs and approval around vaccination and a COVID-19 vaccine, and (4) participant' weight changes and eating patterns relating to COVID-19. Questions about government measures were determined by referencing the Canadian Government's page on policies surrounding COVID-19 (Government of Canada, 2020b), with an example of an item in this

category being ‘The government has done a good job at handling travel restrictions during the pandemic’. Perceptions of the seriousness of the pandemic questions were adapted from Calvillo et al. (2020) as well as from news articles (Harris, 2020; Press & The Canadian Press, 2020) reporting Canadians were not taking the pandemic seriously, with an example of an item in this category being ‘COVID-19 is something that poses a serious risk for me or my family’. Vaccine belief and vaccine knowledge questions were adapted from Baumgaertner et al., (2018), Kennedy et al., (2005), Shapiro et al., (2018) and Wang et al., (2018) and question surrounding weight change were adapted from Zeigler et al., (2021).

The first section of COVID-19 questionnaire (see Appendix D) asked participants a series of five questions to determine their perception of how the government had handled the COVID-19 pandemic. These broke down the government response into 5 areas: (1) travel restrictions, (2) public health guidelines such as mask regulations, (3) government mandated business restrictions, (4) unemployment benefits for those laid off, and (5) general government preparedness for the pandemic. An example of a question from this measure included ‘The government has done a good job at handling travel restrictions during the pandemic.’. These questions were placed on a 5-point Likert scale, with 0 being ‘completely disagree’ and 4 being ‘completely agree,’ for a total maximum score of 20 points.

The next section aimed to determine how seriously the participants believed the COVID-19 pandemic should be taken (see Appendix E). This category included seven questions, broken into two general categories. The first included asking to what extent participants believed the pandemic poses a personal risk to them, and if it was something that should be taken seriously. The second asked to what extent participants believed news and media surrounding the pandemic had been exaggerated. An example of a question from this measure included ‘COVID-19 is

something that poses a serious risk for me or my family.'. These questions were placed on a 5-point scale, with 0 being 'completely disagree' and 4 being 'completely agree,' for a total maximum score of 28 points.

The third section of COVID-19-themed questions asked how participants viewed vaccines, and in particular a COVID-19 vaccine (see Appendix F). The Vaccine Hesitancy Scale (Shapiro et al., 2018) was adapted for the purpose of this questionnaire. Initially, the scale was developed to assess vaccine hesitancy of around mandatory childhood vaccination, and for the purpose of the present study was adapted to inquire about either vaccines in general, or a COVID-19 vaccine. Seven questions were included from the Vaccine Hesitancy Scale and adapted in relation to the COVID-19 vaccine. Questions included the effectiveness of vaccines, past history with vaccination and COVID-19 vaccination status, and government policy pertaining to the COVID-19 vaccine, with an example of an item in this category being 'Getting vaccines is a good way to protect myself from disease'. These items were rated on a 5-point scale with 0 being 'strongly disagree' and 4 being 'strongly agree'. Scores were totalled, allowing for a maximum score of 28. Additionally, two open-ended questions were included in this section as knowledge and validity checks. One asked participant how they believed vaccines work, and was included to determine general vaccine knowledge. The other was a follow-up question asking participants who would not want to receive a COVID-19 vaccine to elaborate on their reasoning for this choice.

Several brief questions were also asked around participants' patterns involving their weight and eating. One question asked participants' if their weight had increased or decreased in the last 12-14 months since the start of the COVID-19 pandemic. Following this, those who answered that their weight had changed were asked to approximate how much change had occurred in pounds.

This section concluded with a question asking about participants' fast food eating patterns over the 12-14 months since the start of the COVID-19 pandemic.

2.7 Procedure

After ethics approval was granted (see Appendix G) the survey was copied into an online format. Participants who responded to advertisements for the study were promoted to click a link that redirected them to the survey website. The survey was hosted by Google Forms, and included 3 separate pages. The first page of the survey informed participants of the purpose of the study (see Appendix H), which is to explore the links between how stress and political belief can influence reactions to COVID-19. While no overt deception of participants was employed, the full hypothesis of the research was not revealed to participants until they had completed the survey, as those with a more libertarian/conservative ideology may exhibited a response bias if they had felt targeted by the study. Due to the personal nature of the survey questions, participants were informed that all information linking their identity to their questionnaire responses remained confidential, and would not be given out or published. Informed consent was obtained from all individuals via the first page of the questionnaire (see Appendix I), and participants were reminded that they could withdraw from the study at any time, including after completion of the questionnaire, by contacting the researchers listed on the first page of the study.

Completing the-survey took, on average, between 10-15 minutes. Following completion of the survey, participants were redirected to a third page containing a debriefing document (see Appendix I), thanking them for their participation and soliciting feedback about their experience and suggestions for improvements.

2.8 Data Analysis

The data were analyzed using a combination of statistical methods provided by the IBM statistical software SPSS 26. The main hypotheses were examined using between-subjects Multivariate Analysis of Variance (MANOVA) and Multiple Regression Analysis to explore the variation in responses to COVID-19, in relation to participants' political beliefs and stress levels. The two independent variables examined were political ideology as a continuous variable, and perceived stress (low stress, medium stress, high stress) as a nominal variable. The three dependent variables included were participants' rating of government approval, how seriously COVID-19 was perceived as a threat, and their acceptance of vaccine use and of a COVID-19 vaccine.

3 Chapter 3: Results

3.1 Data Cleaning

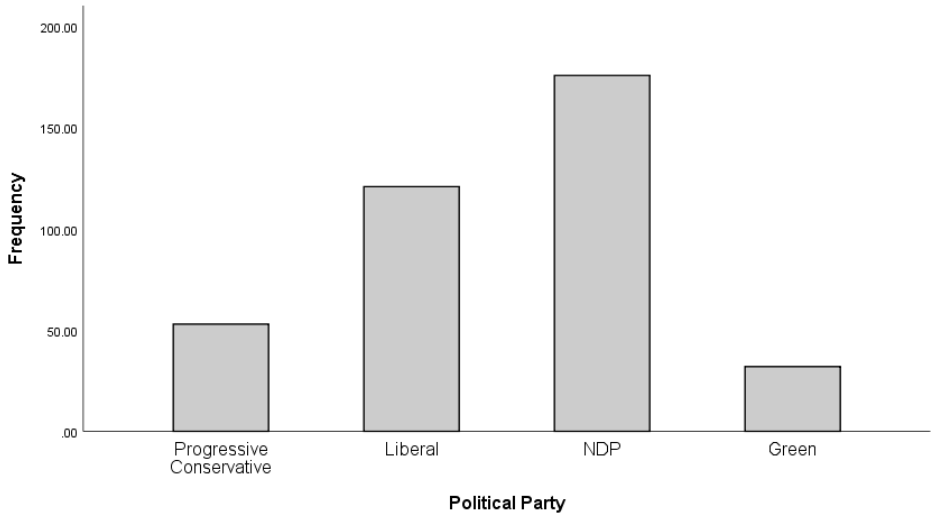
A total of 1775 surveys were completed over the course of the data collection process, from April, 2021 to June, 2021. A large number of these responses were determined to be automated or spam responses due to duplicate responses, and were subsequently excluded. By applying the exclusion criteria of removing participants who entered a completely identical text response of any length to another participant (Teitcher et al., 2015), a total of 382 responses remained and were included in the final data analyses. In other words, 1393 completed surveys were excluded from the analyses, or close to 78% of the available data (almost 4 surveys over 5 were excluded).

3.2 Participants' Demographics

Participants' ages ranged from 18 to over 70 years old, with the most common age range provided being 25-30 years old at 26%, and the overall mean equalling 38 years old (*SD* = 15.92). Female gender was the most common selected at 57%, followed by male at 40%, and non-binary or 'Other' at 3%. When queried about education, 83% of respondents had completed post-secondary education or higher, and only 3% had lower than a high school education. Participants' geographic residence location was largely made up by Sudbury, Ontario residents (39%) followed by areas surrounding Sudbury (29%) including Espanola, North Bay, Manitoulin, and 24% being found in other areas of Northern Ontario. Only 8% of participants identified as living in an area other than Northern Ontario and were retained in the main analyses for comparison by location. When asked which political party they were most likely to support, 13.9% chose the Progressive Conservatives, 31.7% selected Liberal, 46.1 % NDP, and 8.4% selected that they would choose the Green party (see Figure 1).

Figure 1

Participants' Political Party Preference



Title. Frequency of participants first choice of political party to vote for. Party choices include the Progressive Conservative Party *(n* = 53), Liberal *(n* = 121), NDP *(n* = 176), and Green *(n* = 32).

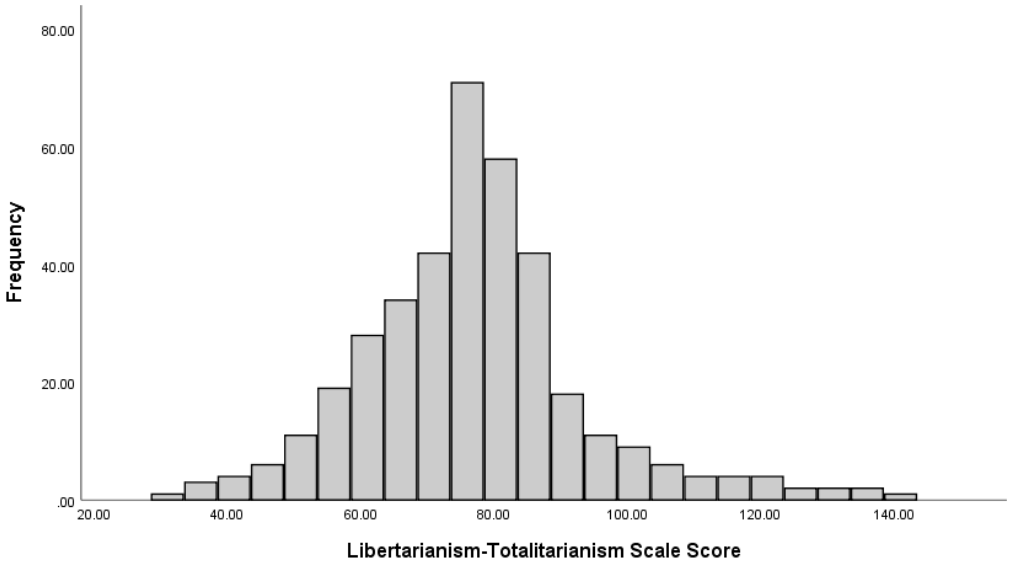
3.3 Instrument Validity and Principal Component Analyses

3.4 *Validity and Principal Component Analyses r Analysis of Libertarianism-Totalitarianism Scale*

The Libertarianism-Totalitarianism Scale was found to be normally distributed, with a mean score of 76.89, and a standard deviation of 16.79. Skewness (0.663) and Kurtosis (1.70) were both found to be within acceptable ranges (see Figure 2).

Figure 2

Frequency Distribution of the Libertarianism-Totalitarianism Scale



The Libertarianism-Totalitarianism Scale was examined by conducting a principal component analysis using the Oblimin rotation. Using the Kaiser normalization, components were retained if their Eigenvalue exceeded 1. Results showed four main components explained 62.41% of the variance in the sample. However, the first two components identified explained 49.47% of the variance in the sample; 26.49% for component one and 22.98% for component two (see Table 1). This was an expected outcome and lines up with the dichotomy between Libertarianism and Totalitarianism. Higher or more libertarian scores on this scale indicate more support for items relating to lower government power and less restrictions of individual freedom, and are correlated with individuals who support conservative parties. Scale was found to have a Cronbach's alpha of .83.

Table 1

Eigenvalues, Percentage of Variance, and Cumulative Percentages for Components of the Libertarianism-Totalitarianism Scale Items

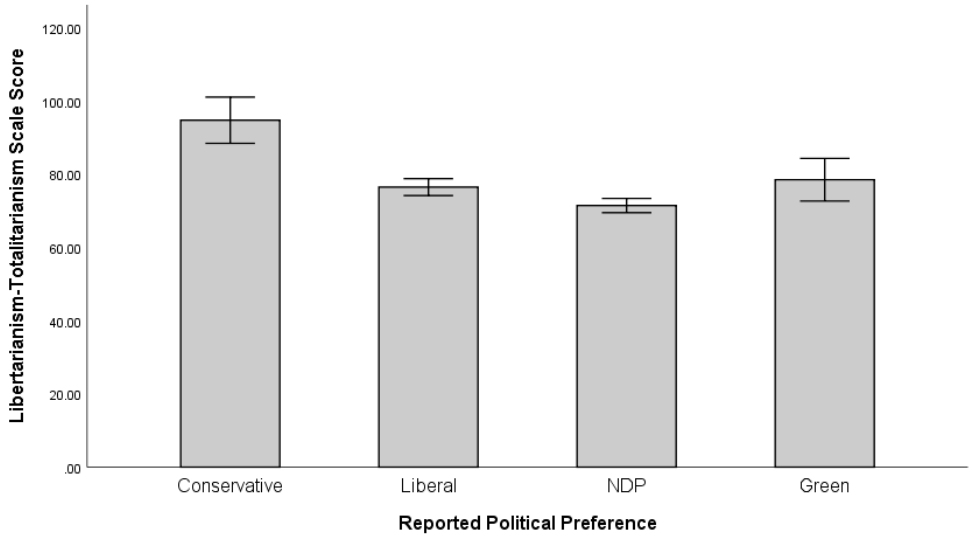
Component	Eigenvalue	% of variance	Cumulative %
1	5.30	26.49%	26.49%
2	4.59	22.98%	49.47%
3	1.49	7.45%	56.91%
4	1.10	5.49%	62.41%

3.5 *Libertarianism-Totalitarianism Scale and Party Preference*

The Libertarianism-Totalitarianism Scale was further validated by comparison to participants' self-reported political party preference. The ANOVA was found to be significant $F(3,378) = 32.92$, $p < .001$, $\eta_p^2 = .21$. Additional post-hoc analysis using a Fisher Least Significant Difference (LSD) test revealed that Progressive Conservatives ($M = 94.79$, $SD = 22.92$) scored significantly higher than Liberals ($M = 76.50$, $SD = 12.84$), NDP ($M = 71.47$, $SD = 13.09$), and Green ($M = 78.53$, $SD = 16.16$), where higher scores corresponded to a more conservative/libertarian political ideology. Additionally, individuals who supported the NDP scored significantly lower than both Liberal and Green party supporters. No significant difference was found between Liberal and Green members on Libertarianism-Totalitarianism Scale scores (see Figure 3).

Figure 3

Libertarianism-Totalitarianism Scores and Party Preference



Title. Comparison between participants reported political party preference to mean score on the Libertarianism-Totalitarianism scale, $F(3,378) = 32.92$, $p < .001$, $\eta_p^2 = .21$. Error bars represent the *SE*.

3.6 *Validity and Principal Component Analysis of PSS-10 Scale*

The PSS-10 Scale was used as a measure of participants' perceived stress over the past month. The mean score was 19.13, with a standard deviation of 7.40. The PSS-10 was found to be normally distributed with values of Skewness (-0.16) and Kurtosis (-0.211) both found to be within acceptable ranges (see Figure 4).

Gender was not found to have a significant effect on scores ($F(3, 378) = 0.86$, $p > .05$), nor was education level ($F(4, 377) = 1.09$, $p > .05$). However, a significant negative correlation was found between age and PSS-10 scores, ($r = -.24$, $p < .01$), indicating older ages were associated with lower stress scores (see Figure 5).

Figure 4

Frequency Distribution of the PSS-10 Scale

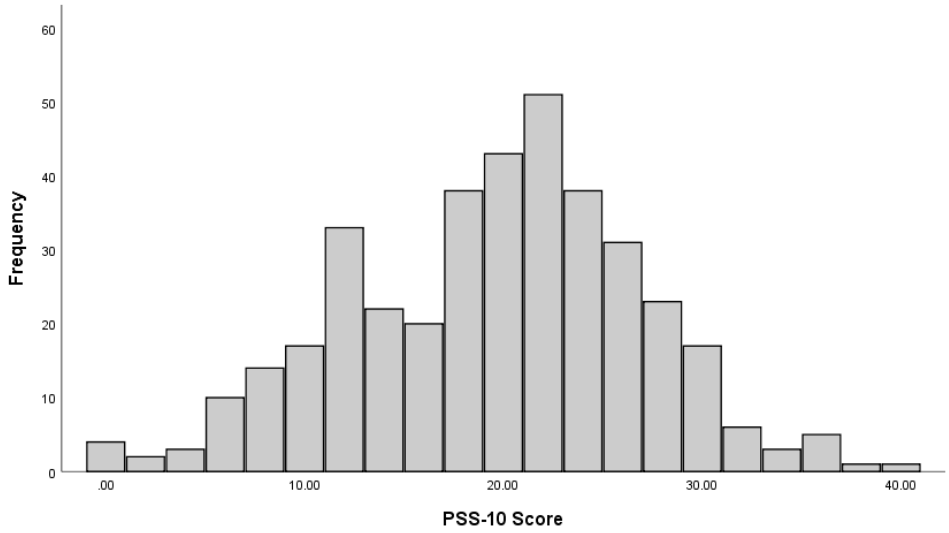
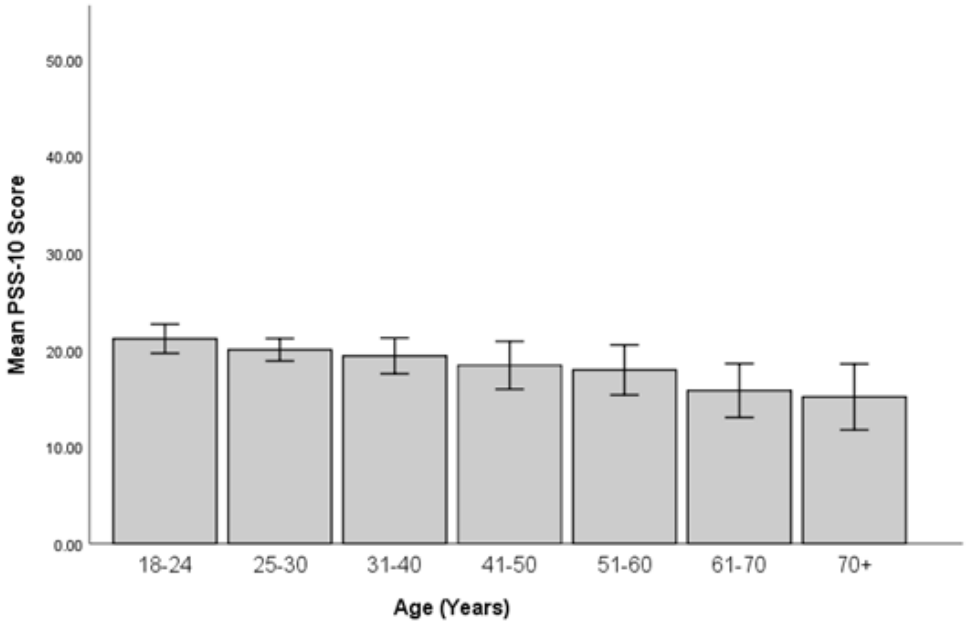


Figure 5

PSS-10 Scores and Participants' Age



Title. Bar graph comparing mean PSS-10 score to categorical ages of participants. Age was found to have a significant negative correlation to stress, (r =-.24, p < .01). Error bars represent the *SE.*

The PSS-10 was also examined by conducting a principal component analysis using the Oblimin rotation. Using the Kaiser normalization, components were retained if their Eigenvalue exceeded 1. Two components were found, explaining 62.12% of the common variance in the sample. The first component was found to explain 45.11% of the variance while the second component explained 17.00% of the variance (see Table 2), and a Cronbach's alpha of .60 was found. This two-component structure was expectable and has been found by previous studies of the PSS-10, where two components relating to adaptation and coping to stress have been noted (Hewitt et al., 1992; Mitchell et al., 2008).

Table 2

Eigenvalues, Percentage of Variance, and Cumulative Percentages for Components of the PSS-10 Items

Component	Eigenvalue	% of variance	Cumulative %
1	4.51	45.11%	45.11%
2	1.70	17.00%	62.16%

3.7 *Principal Component Analyses of Government Support, Perceived Severity, and Vaccine Attitudes Scales*

Three novel scales were included in the questionnaire with questions adapted from previous studies: a Support of Government Measures Scale , a Perceived Severity of COVID-19 Scale, and a COVID-19 Vaccine Support Scale.

These scales were also examined by conducting a principal component analysis using the Oblimin rotation. Using the Kaiser normalization, components were retained if their Eigenvalue exceeded 1. The scale measuring support of government measures consisted of 5 items and was found to contain a single component (see Tables 3 and 4). This component explained 58.38% of the common variance in the sample. However, further analysis revealed that one question “The government was not well prepared for the pandemic“, had a component value of only .24, falling below the acceptable value of .50 and was subsequently excluded from all further analysis, and a Cronbach’s alpha of .85 was calculated for the final scale.

Table 3

Component Loadings for the Support of Government Measures Scale

Item	Component 1
The government has done a good job at handling travel restrictions during the pandemic.	**.717**
The government has done a good job of providing public health guidelines (e.g., mask wearing, social distancing) during the pandemic.	**.617**
The government has done a good job in managing and regulating businesses (e.g., mandating closures, restricting numbers of people) during the pandemic.	**.737**
The government has done a good job of providing support (e.g., CERB benefits, time off work while isolating) for those affected by the pandemic.	**.556**
The government was not well prepared for the pandemic.	**.237**

Table 4

Eigenvalues, Percentage of Variance, and Cumulative Percentages for Support of Government Measures Scale

Component	Eigenvalue	% of variance	Cumulative %
1	2.92	58.38%	58.38%

The scale measuring the perceived severity of COVID-19 consisted of 7 items and was found to contain 2 components explaining 73% of the common variance in the sample (see Tables 5 and 6). The first component accounted for 57.95% of the variance while the second explained 15.39%. Further examination of the two components indicated that question 2, “Information and news about the danger of COVID-19 appears to be exaggerated” and question 5, “I am taking COVID-19 less seriously now than I did at the start of the pandemic” were not related to either Component 1 or 2, and were therefore used to form their own component. These two questions were excluded from further analysis, reducing the scale to 5 questions, resulting in a calculated Cronbach’s alpha of .91.

Table 5

Component Loadings for Items on the COVID-19 Perceived Seriousness Scale

	Component loading	
Item	1	2
It is important to follow instructions from public health (e.g., mask wearing, social distancing).	**.850**	**.165**
Information and news about the danger of COVID-19 appears to be exaggerated.	**-.633**	**.497**
I make sure to follow all rules around COVID-19 (e.g., social gathering restrictions).	**.789**	**.143**
People need to take the pandemic more seriously.	**.873**	**.134**
I am taking COVID-19 less seriously now than I did at the start of the pandemic.	**-.346**	**.851**
COVID-19 really is something that needs to be taken seriously.	**.868**	**.137**
I change plans to avoid situations with a higher chance of catching COVID-19 (e.g., avoiding busy stores, not visiting friends who have travelled recently).	**.822**	**.147**

Table 6

Eigenvalues, Percentage of Variance, and Cumulative Percentages for Perceived Severity of COVID-19 Scale

Component	Eigenvalue	% of variance	Cumulative %
1	4.86	57.95%	57.95%
2	1.08	15.40%	73.34%

The final novel scale relating to COVID-19 Vaccine Support consisted of 7 items and was found to contain 2 components explaining 75.59% of the variance in the sample (see Tables 7 and 8). The first component accounted for 59.37% of the variance explained and the second for 16.22%. Further examination of the component analysis revealed all questions found in component 1 were above the acceptable component loading cut off value of .50, and that the second component was made up of the two reverse coded questions. Therefore, all questions from this scale were maintained for further analysis and the second component was not used for analyses. A Cronbach's alpha of .79 was calculated for the items that were retained for this scale.

Table 7

Component Loadings Items on the COVID-19 Vaccine Attitudes Scale

	Component loading	
Item	1	2
Vaccines are a good way to be protected from disease.	**.842**	**.034**
Vaccines are effective.	**.856**	**-.044**
Being vaccinated is important for the health of others in my community.	**.846**	**.022**
Information about vaccines from the government is reliable and trustworthy.	**.821**	**.101**
Generally, I do what my doctor or health care provider recommends about vaccines.	**.796**	**.081**
New vaccines carry more risks than older vaccines.	**-.508**	**.698**
I am concerned about serious adverse effects of vaccines / the COVID-19 vaccine.	**-.519**	**.698**
I would or would have paid to get the COVID-19 vaccine early.	**.521**	**.434**
Being vaccinated against COVID-19 should be mandatory for those who are able.	**.678**	**.333**

It is fair that some people receive the COVID-19 vaccine before me.	**.379**	**.287**

Table 8

Eigenvalues, Percentage of Variance, and Cumulative Percentages for COVID-19 Vaccine Attitudes Scale

Component	Eigenvalue	% of variance	Cumulative %
1	4.87	48.65%	48.65%
2	1.38	13.76%	72.93%

3.8 Main Analyses

3.9 *Libertarianism-Totalitarianism Scale and Government Support, Perceived Severity, and Vaccine Attitudes*

To examine the hypothesis that the scores on the Libertarianism-Totalitarianism Scale would predict the scores on the Government Support, COVID-19 Perceived Severity, and Vaccine Attitudes scales, a multiple regression analysis was employed. The model was created using the "Enter" method of predictor entry.

To examine the reliability of the model, the effect of extreme or outlier values were examined using both Cook's distance (Maximum .042) and Mahalanobis distance (Maximum 12.891). Cook's distance indicated no significant problems found with outliers, but due to the high maximum Mahalanobis distance, case-wise diagnostics of outliers was performed. Two cases (305 and 364) were found to have standard deviations of greater than 3 and were classified as

outliers and excluded from the final model. As well, no problems were found with the normal distribution of the data because examination with both a histogram and a P-P plot of regression standardized residual values indicated a normal distribution.

The overall regression model was examined and was found to be significant, $F(3,378) = 74.23$, $p < .001$, with the model having an R squared value of 0.371, indicating that the predictor allowed explanation of around 37% of the variability in the model. Specifically, government support was found to be a significant ($t = -6.189$, $p < .001$) predictor, perceived seriousness was found to be a significant predictor ($t = -5.05$, $p < .001$) and vaccine attitudes was found to be a significant predictor as well ($t = -4.13$, $p < .001$). Among these, perceived seriousness was found to be the better predicted score, with a standardized beta coefficient of -.285. Individual Pearson correlation coefficients were calculated (see Table 8) for these three dependent variables were $r = -.395$, $p < .001$ for government support (see Figure 6), perceived seriousness $r = -.507$, $p < .001$ (see Figure 7), and vaccine attitudes $r = -.512$, $p < .001$ (see Figure 8). These significant negative correlations indicated that higher or more conservative/libertarian scores on the Libertarianism-Totalitarianism scale were correlated with lower scores on the dependent variables. In other words, right-leaning individuals were more likely to show less support for government measures around COVID-19, to express less seriousness of the pandemic, and to have negative attitudes towards the vaccine.

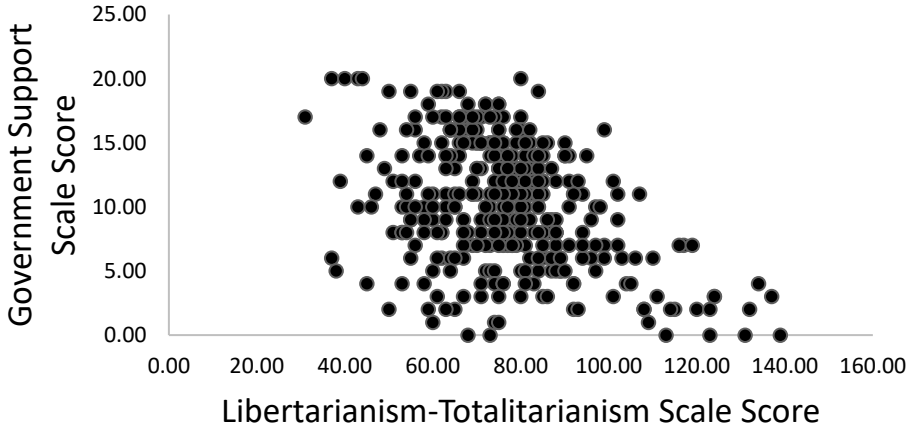
Table 8

Correlations Between Political Ideology and Measures of COVID-19

Variable	1	2	3
1. Libertarianism-Totalitarianism	-		
2. Government Support	-.395	-	
3. Perceived Seriousness	-.507	.215	-
4. Vaccine Attitudes	-.512	.292	.691

Figure 6

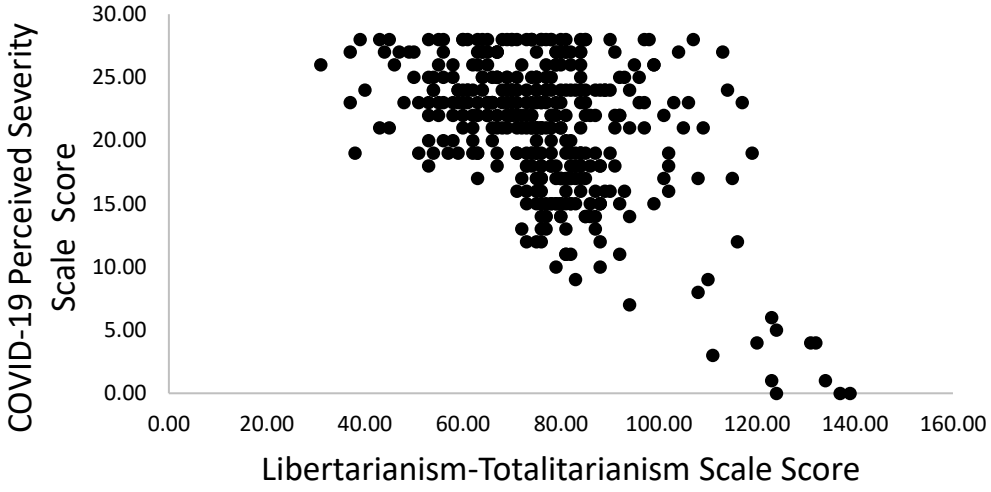
Libertarianism-Totalitarianism and Government Support Scale



Title. Significant negative correlation between Libertarianism-Totalitarianism scores and support of government policy surrounding COVID-19 (r = -.395, p < .001). Higher values on the Libertarianism-Totalitarianism scale indicate more right-leaning or conservative/libertarian values.

Figure 7

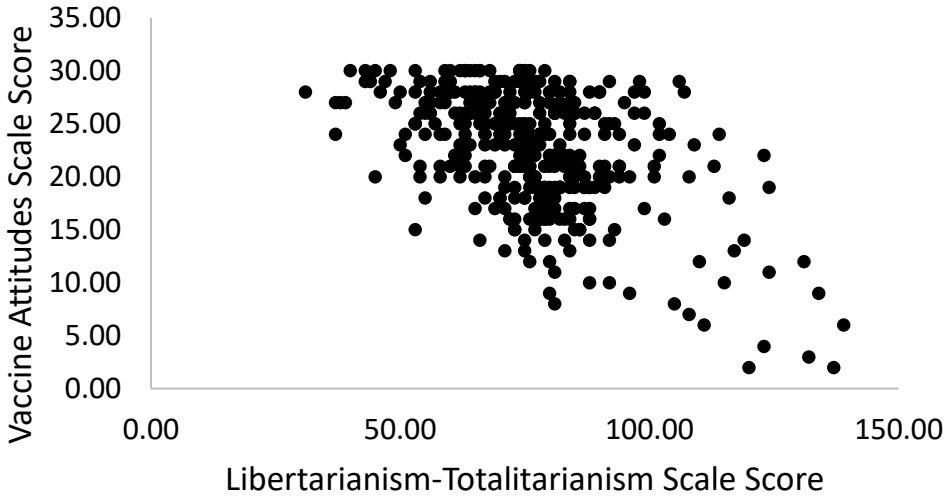
Libertarianism-Totalitarianism and Perceived Severity of COVID-19



Title. Significant negative correlation between Libertarianism-Totalitarianism scores and scores on the Perceived Severity of COVID-19 scale (r = -.507, p <.001). Higher values on the Libertarianism-Totalitarianism scale indicate more right-leaning or conservative/libertarian values.

Figure 8

Libertarianism-Totalitarianism and Vaccine Attitudes



Title. Significant negative correlation between Libertarianism-Totalitarianism scores and COVID-19 vaccine acceptance attitudes (r = -.512, p < .001). Higher values on the Libertarianism-Totalitarianism scale indicate more right-leaning or conservative/libertarian values.

3.10 *PSS-10 and Government Support, Perceived Severity, and Vaccine Attitudes*

To examine the effect of Perceived Stress (Low Stress, Moderate, High Stress) on Government Support, COVID-19 Perceived Severity, and Vaccine Attitudes, multiple one-way-ANOVA were employed.

The main effect of PSS-10 on Government Support was found to be nonsignificant, $F(2, 379) = 1.00$, $p > .05$, $\eta p^2 = .005$ (see Figure 12). However the effect of the PSS-10 on COVID-19 Perceived Severity $F(2, 379) = 13.86$, $p < .001$, $\eta p^2 = .07$, as well as on COVID-19 Vaccine

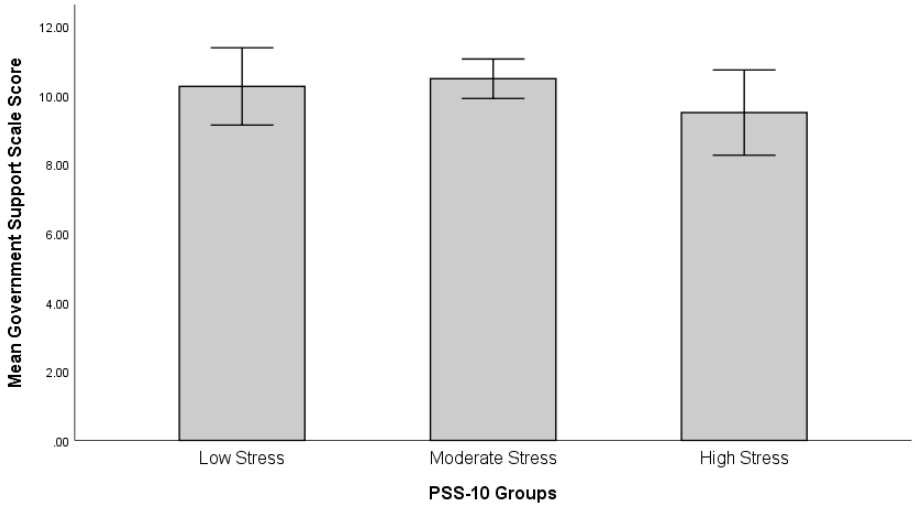
Attitudes was found to be significant $F(2, 379) = 11.00$, $p < .001$, $\eta p^2 = .06$. It should be noted the main effects were found to have effect sizes in the low range.

To more closely examine these significant main effects, multiple post hoc LSD tests were carried out. For the Perceived Severity of COVID-19, those in the Moderate Stress category (*M* = 19.82, *SD* = 5.70) had lower scores than those in both the High Stress (*M* = 22.86, *SD* = 4.91), and Low Stress (*M* = 22.24, *SD* = 5.09) categories. There was no significant difference noted between the Low Stress and the High Stress categories (see Figure 10).

When examining COVID-19 Vaccine Acceptance Attitudes, a similar result emerged. Those in the Moderate Stress category (*M* = 21.16, *SD* = 5.34) had lower scores than both the High Stress (*M* = 23.77, *SD* = 5.27), and Low Stress (*M* = 24.34, *SD* = 5.67). There was again no significant difference noted between the Low Stress and the High Stress categories (see Figure 11).

Figure 9

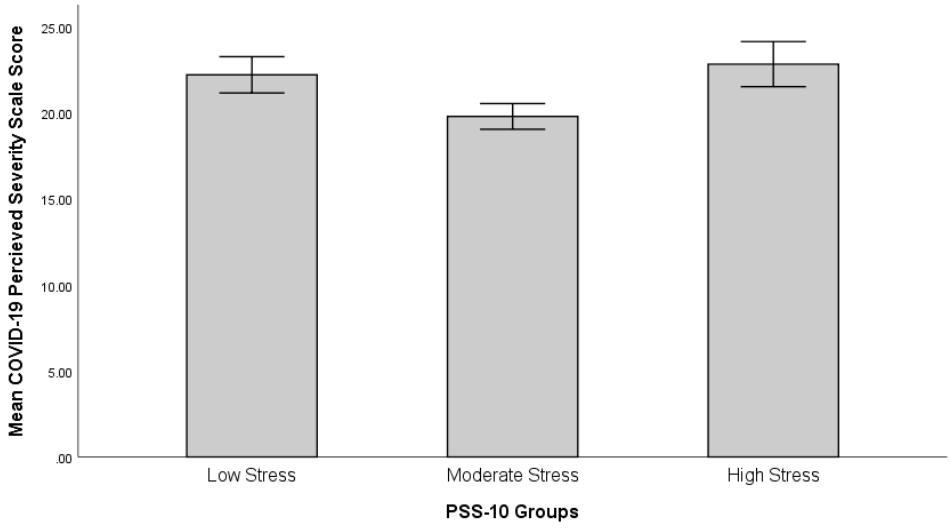
PSS-10 and Government Support Scale



Title. The effect of PSS-10 score grouping (*Low Stress*, *Moderate Stress*, *High Stress*) on scores on the support of government policy surrounding COVID-19 scale. No significant difference was found between groups. Error bars represent the *SE*.

Figure 10

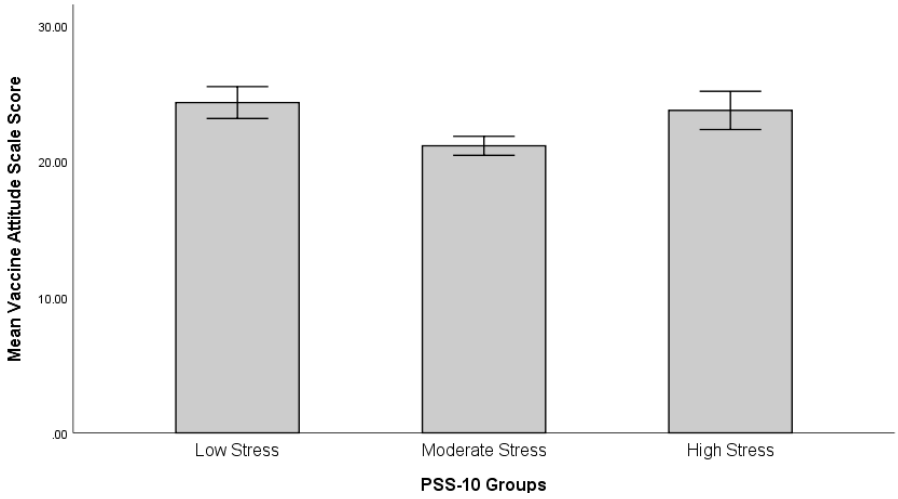
PSS-10 and Perceived Severity of COVID-19



Title. The effect of PSS-10 score grouping (*Low Stress, Moderate Stress, High Stress*) on scores on the support of government policy surrounding COVID-19 scale. Moderate Stress showed significantly lower scores than both Low and High Stress, $F(2, 379) = 13.86$, $p < .001$, $\eta p^2 = .07$. Error bars represent the *SE*.

Figure 11

PSS-10 and Vaccine Attitudes



Title. Bar graph representing the effect of PSS-10 score grouping (Low Stress, Moderate Stress, High Stress) on scores of COVID-19 vaccine acceptance attitudes. The Moderate Stress group had significantly lower scores than both the Low and High Stress groups, $F(2, 379) = 11.00$, $p < .001$, $\eta p^2 = .06$). Error bars represent the *SE*.

3.11 Exploratory Analyses

3.12 *Participants' COVID-19 Vaccination Status and Scores of Libertarianism-Totalitarianism and PSS-10*

Over 60% of participants reported being either vaccinated with 1 dose (45%), or 2 doses (15%) of the COVID-19 vaccine at the time of the survey. The remaining participants identified that they either had not received a dose yet (28%), or that they refused to receive a dose of the vaccine (12%) (see Figure 12).

The PSS-10 was compared against COVID-19 vaccination status using a one-way ANOVA, and no significant effect was found $F(3, 378) = 0.94$, $p > .05$, $\eta p^2 = .07$.

Scores on the Libertarianism-Totalitarianism Scale were also compared against COVID-19 vaccination status by conducting a one-way ANOVA. Levene's test of equality of error variances was found to be nonsignificant, while the ANOVA was found to be significant $F(3, 378) = 10.53$, $p < .001$, ηp2 = .21 . Examination via LSD test revealed that those who had received 2 doses of the vaccine ($M = 66.83$, $SD = 11.83$) scored lower on the Libertarianism-Totalitarianism Scale than those who had only one dose ($M = 76.89$, $SD = 16.07$), zero doses ($M = 80.81$, $SD = 17.39$), or identified that they would be electing to not receive the COVID-19 vaccine ($M = 80.75$, $SD = 16.79$) (see Figure 13).

Figure 12

Participants' COVID-19 Vaccination Status Frequency

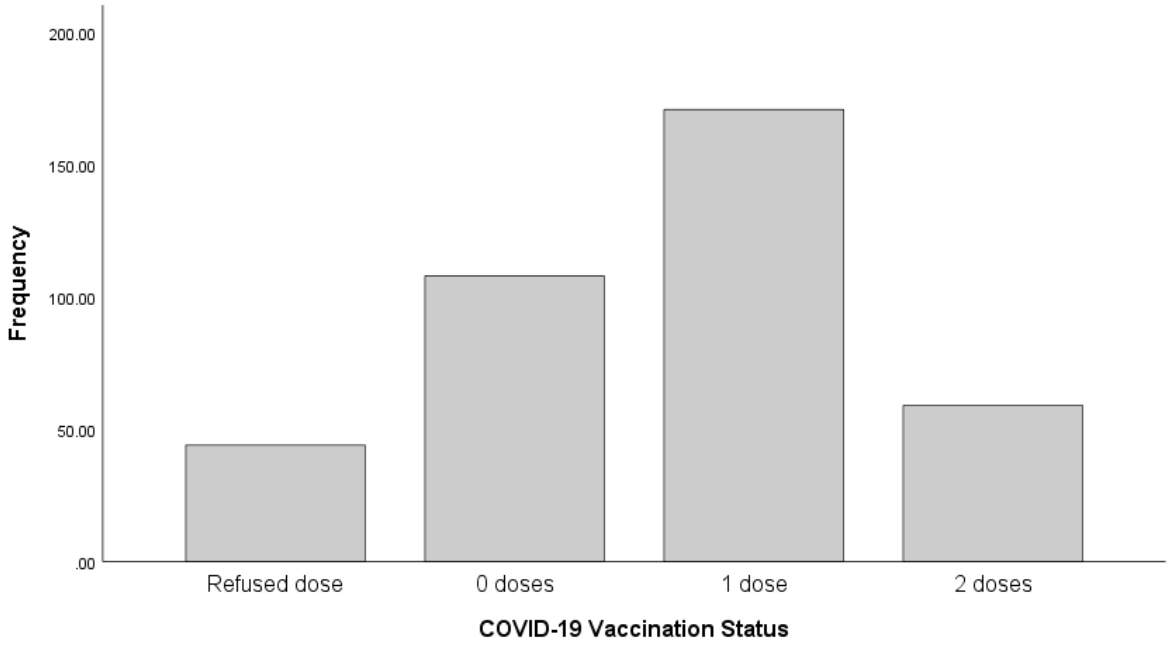
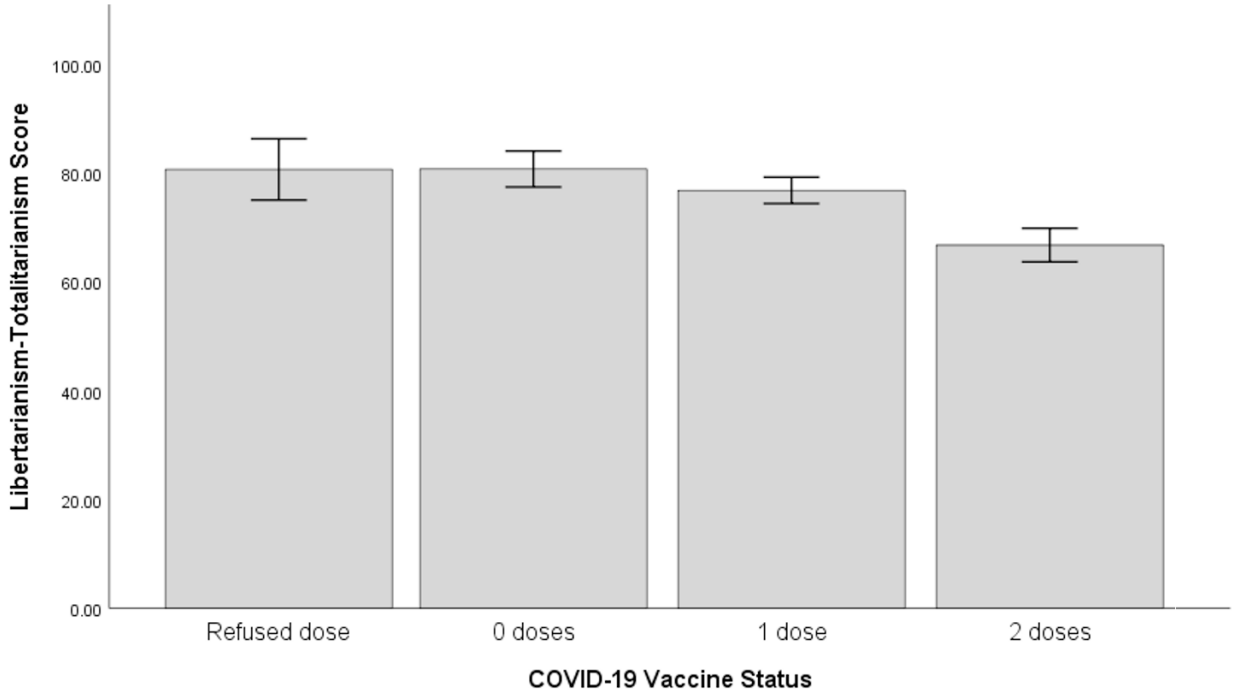


Figure 13

Libertarianism-Totalitarianism and COVID-19 Vaccination Status



Title. The significant effect of Libertarianism-Totalitarianism score on COVID-19 vaccination status $F(3, 378) = 10.53$, $p < .001$ ηp2 = .21 . Those who had received 2 doses (fully vaccinated) had significantly lower or more left-leaning political views than those with 1 dose, 0 doses, or those who had refused to become vaccinated. Error bars represent the *SE*.

3.13 *PSS-10 and Financial Security, Weight Change, and Job Exposure*

The effect of PSS-10 scores on rated financial security was examined by conducting a One-Way Analysis of Variance and was found to be significant F(2, 378) = 12.32, $p < .001$ ηp2 = .28. Post-hoc LSD examination revealed that those scoring in the low stress category ($M = 4.16$, $SD = 0.92$) had significantly higher rated financial security than both moderate stress ($M = 3.60$, $SD = 1.03$) and high stress ($M = 3.43$, $SD = 1.19$) (see Figure 14). In other words, those who scored

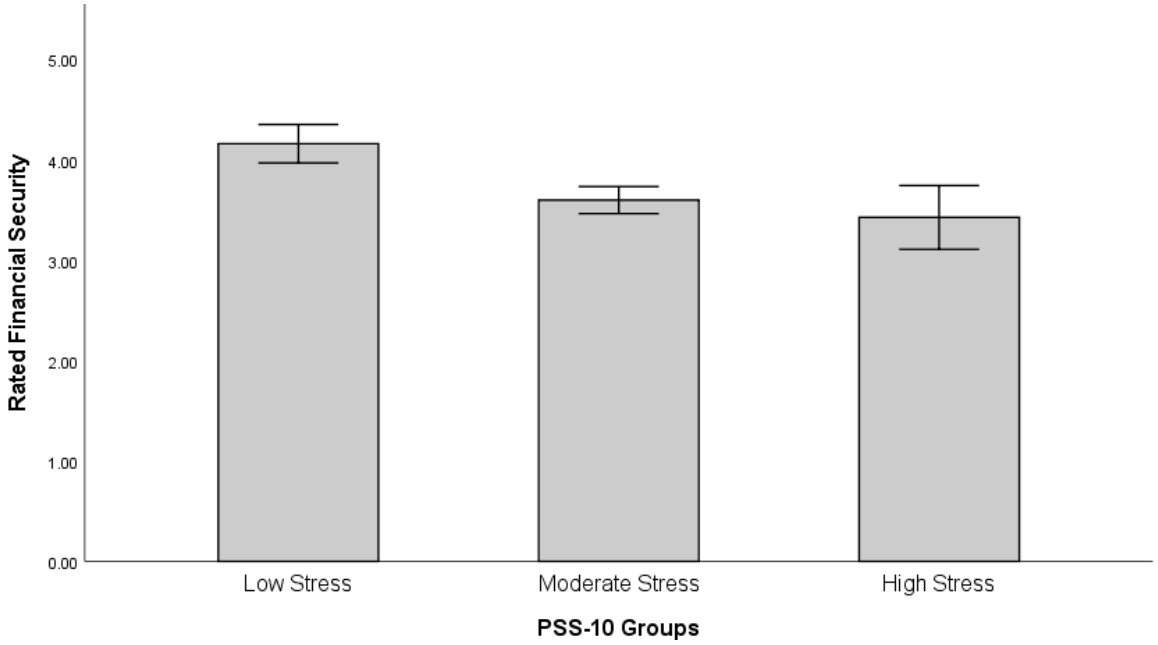
higher on the measure of stress were the least financially secure and low stress was associated with being more financially secure.

The effect of PSS-10 scores on weight change was examined by conducting a One-Way Analysis of Variance and was found to be significant $F(2, 378) = 3.72$, $p < .05$, $\eta p^2 = .32$. Post-hoc LSD examination revealed that those scoring in the low stress category ($M = 2.07$, $SD = 1.01$) reported gaining significantly less weight than those in the high stress category ($M = 2.55$, $SD = 1.09$) (see Figure 15). This means that more or higher levels of stress and either accompanies to or led to increased weight gain.

The job exposure to COVID-19 was examined in connection to participants' PSS-10 scores. A One-Way Analysis of Variance and was found to be significant $F(1, 380) = 13.05$, $p < .001$, $\eta p^2 = .41$. Post-hoc LSD examination revealed that those reporting job exposure to COVID-19 ($M = 20.56$, $SD = 6.91$) had higher scores on the PSS-10 than those who did not ($M = 17.86$, $SD = 7.59$) (see Figure 16). In other words, those who had increased exposure to COVID-19 though their jobs had increased levels of stress.

Figure 14

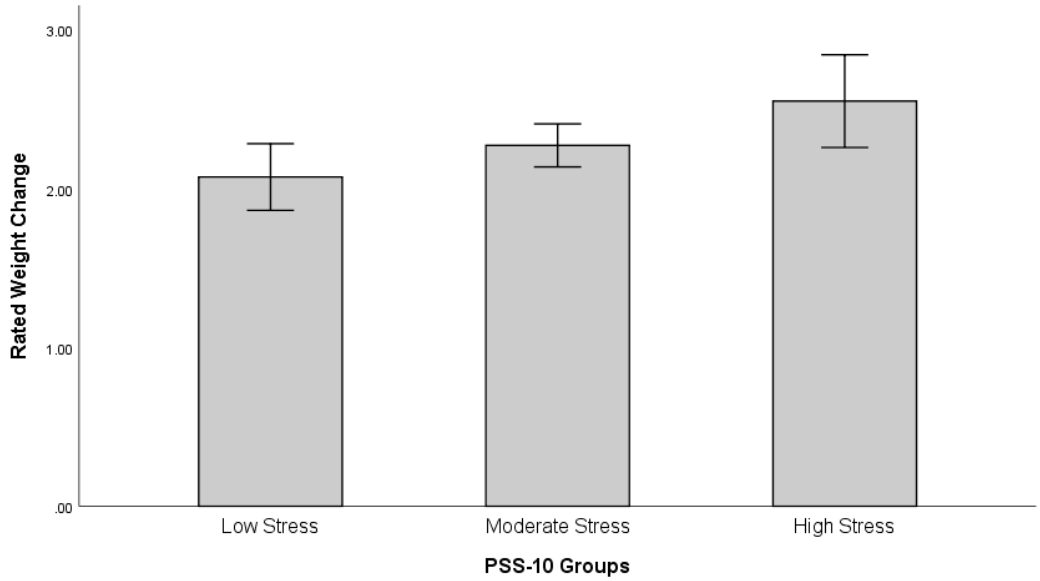
PSS-10 and Financial Security



Title. The significant effect of PSS-10 category on individuals rated financial security (*1=Not secure, 5=Very secure*). Those in the low stress category rated their financial security as significantly more secure than those in the moderate and high stress categories $F(2, 378) = 12.32$, $p < .001$. Error bars represent the *SE*.

Figure 15

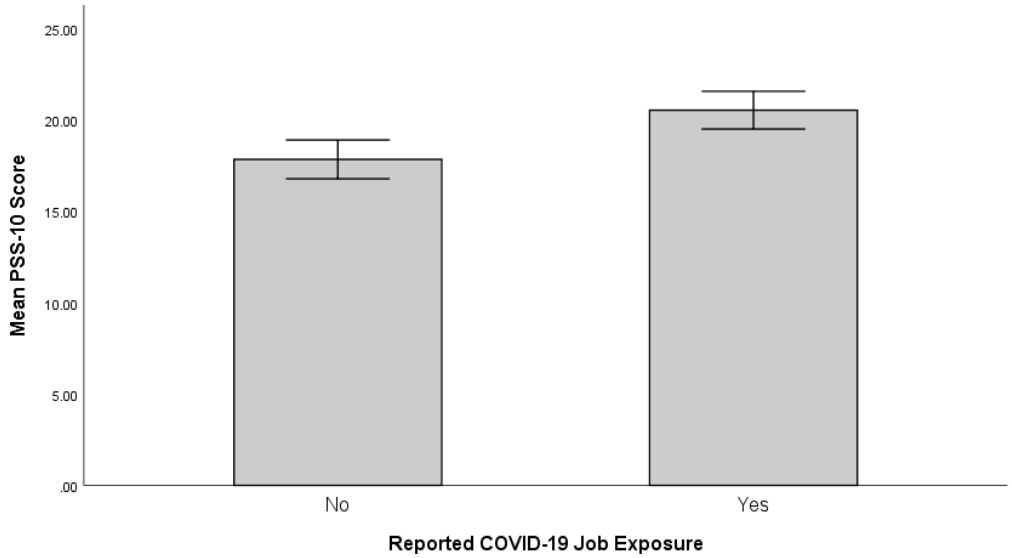
PSS-10 and Weight Change



Title. PSS-10 groups and participant rated weight change (*1=Lost weight, 2= About the same, 3= Gained weight*) over the course of the COVID-19 pandemic. Participants who scored in the highest stress group gained significantly more weight than those who scored in the low stress category, $F(2, 378) = 3.72$, $p < .05$). Error bars represent the *SE*.

Figure 16

PSS-10 and COVID-19 Job Exposure



Title. PSS-10 scores and participants' exposure status to COVID-19 while at work. Those who reported working in a job that exposed them to the risk of COVID-19 scored significantly higher on the PSS-10 than those who did not have the same exposure, $F(1, 380) = 13.05$, $p < .001$. Error bars represent the *SE*.

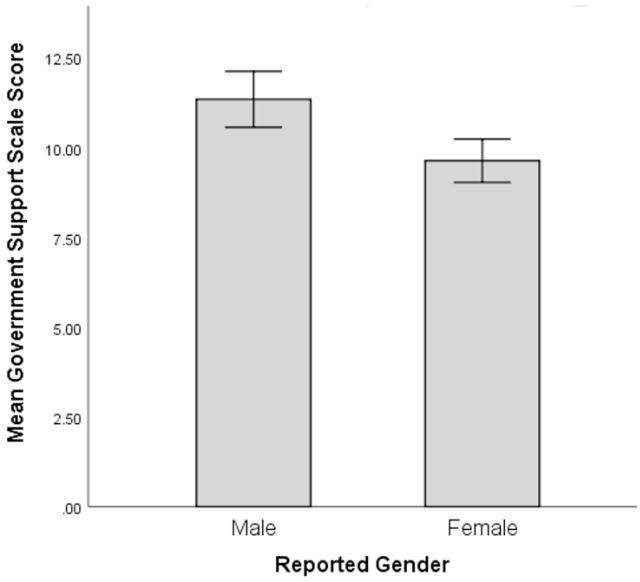
3.14 *Gender and Government Support and COVID-19 Perceived Severity*

The effect of participant gender was examined in connection to participants' scores on the Government Support Scale. A One-Way ANOVA and was found to be significant $F(3, 378) = 4.927$, $p < .01$. Post-hoc LSD examination revealed that Male participants ($M = 11.35$, $SD = 4.97$) scored higher on levels of government support than Female participants ($M = 9.64$, $SD = 4.47$) (see Figure 17). Sample sizes of non-Binary or individuals who did not report their gender were insufficient for analyses of these groups.

The effect of participant gender was examined in connection to participants' scores on the COVID-19 Perceived Severity Scale. A One-Way ANOVA and was found to be significant $F(3, 378) = 6.65$, $p < .001$. Post-hoc LSD examination revealed that Female participants ($M = 21.69$, $SD = 5.14$) scored higher on levels of COVID-19 Perceived Severity than Male participants ($M = 20.03$, $SD = 5.74$) (see Figure 18). Insufficient sample sizes of non-Binary or individuals who did not report their gender were available for analysis.

Figure 17

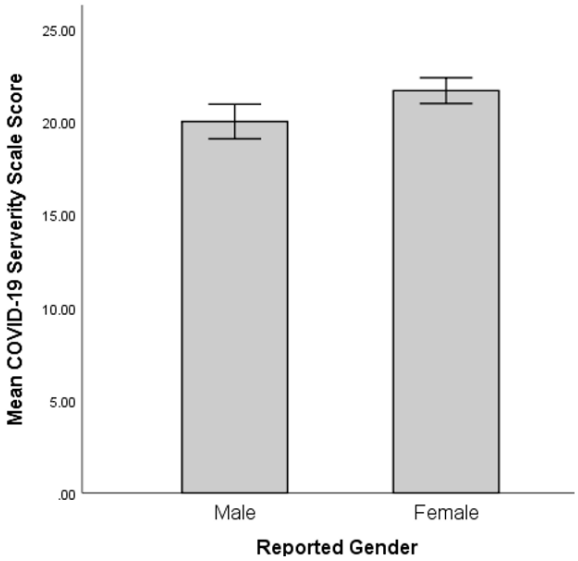
Gender and Government Support



Note. Bar graph representing participant identified gender and level of support towards government COVID-19 measures ($F(3, 378) = 4.927$, $p < .01$). Those who identified as Male reported higher support than those who identified as Female. Error bars represent the *SE*.

Figure 18

Gender and Perceived Severity



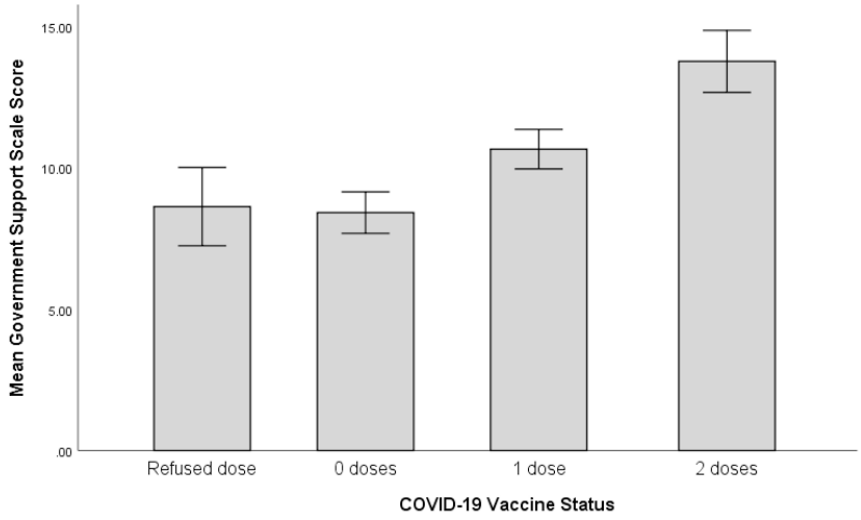
Title. Bar graph representing participant identified gender and perceived severity of COVID-19, (F(3, 378) = 6.65, $p < .001$). Those who identified as Female reported higher levels of severity than those who identified as Male. Error bars represent the *SE*.

3.15 *Vaccine Status and Government Support*

The effect of COVID-19 vaccination status was examined in connection to participants' scores on the government support scale. A One-Way ANOVA was conducted and found to be significant $F(3, 378) = 22.01$, $p < .001$. Post-hoc LSD examination revealed that those with 2 doses of the vaccine ($M = 13.77$, $SD = 4.21$) scored higher on the Government Support Scale than those with 1 dose ($M = 10.67$, $SD = 4.58$), 0 doses ($M = 8.43$, $SD = 8.82$), or those who refused vaccination ($M = 8.63$, $SD = 4.60$). Those who had received 1 dose also scored higher than those who had received 0 doses and who had refused vaccination. Those who had received 0 doses were not significantly different than those who refused vaccination (see Figure 19).

Figure 19

Vaccine Status and Government Support



Title. Bar graph representing COVID-19 vaccination status compared to level of support for government measures around COVID-19 $F(3, 378) = 22.01$, $p < .001$. Those with 2 doses (fully vaccinated) expressed higher support than those with 1 dose, 0 does, or who had refused to become vaccinated did. Those with 1 dose also expressed higher support than those with 0 doses or who had refused to become fully vaccinated. Error bars represent the *SE*.

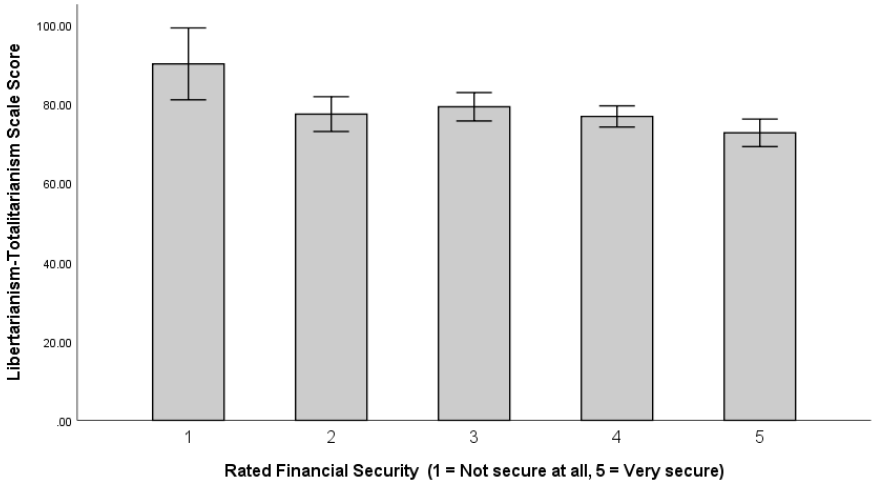
3.16 *Libertarianism-Totalitarianism and Rated Financial Security*

The effect of political ideology via the Libertarianism-Totalitarianism Scale scores on rated financial security was examined by conducting a One-Way Analysis of Variance and was found to be significant $F(4, 376) = 3.97$, $p < .01$. Post-hoc LSD examination revealed that those rating their financial security as 1 (*Not very secure at all*; $M = 90.18$, $SD = 15.08$) scored significantly higher on the Libertarianism-Totalitarianism Scale than those who rated their financial security at a level of 2 ($M = 77.47$, $SD = 13.56$), *3* ($M = 79.32$, $SD = 18.29$), 4 ($M = 76.89$, $SD = 14.93$) or

5 (*Very secure*; (*M* = 72.74, *SD* = 17.67; see Figure 20). In other words, more right-leaning individuals rated their financial security as significantly worse than others.

Figure 20

Libertarianism-Totalitarianism and Rated Financial Security



Title. The significant effect of Libertarianism-Totalitarianism on participant rated financial security, $F(4, 376) = 3.97$, $p < .01$). Those who rated their financial security in the lowest category of 1 (*Not secure at all*) scored significantly right-leaning (conservative/libertarian). Error bars represent the *SE*.

4 Chapter 4: Discussion

4.1 Summary of Key Findings

This research was conducted to determine factors associated with individuals' attitudes and behaviours towards the COVID-19 pandemic in a sample collected in Northern Ontario, Canada. In particular, the focus was on examining the associations between political ideology and perceived stress levels on individuals' attitude towards the government's-imposed measures to contain COVID-19, attitudes towards vaccines and the COVID-19 vaccine, how seriously individuals perceived the pandemic, and their vaccination status. It was hypothesized that more conservative/libertarian political ideologies would be associated with lower acceptance and lower pro-COVID-19 attitudes and behaviours, and as well that perceived stress would be linked to more pro-COVID-19 attitudes and behaviours.

As predicted, political ideology was found to be significantly associated more negative COVID-19 attitudes and behaviours. Higher scores on the Libertarianism-Totalitarianism scale, or endorsement of a more conservative ideology, was associated with significantly lower levels of support for government measures to contain COVID-19, higher levels of vaccine hesitancy and lower attitudes towards the COVID-19 vaccine, and lower perceived seriousness of the COVID-19 pandemic. Behaviourally, it was also found that conservative individuals were more likely to only have received one dose of the COVID-19 vaccine, 0 doses, or to report vaccine refusal. Conversely, those who reported a more liberal/totalitarian ideology were more likely to have received 2 doses of the COVID-19 vaccine.

As well, there was no significant association between political ideology and levels of perceived stress. Overall, levels of perceived stress were also elevated compared to the norms developed

with the scale. However, those who reported both low and high levels of stress also held more pro-COVID-19 vaccination attitudes, and increased levels of perceived seriousness of the pandemic. In other words, those who scored in the moderately stressed category were more likely to express distrust in the COVID-19 vaccine and were less worried about the perceived risk of the pandemic. As well, high perceived stress over the course of the pandemic was linked to increased weight gain.

It was also found that the Libertarianism-Totalitarianism scale was significantly associated with individuals' self-reported political party preferences. Higher or more right-leaning scores on the Totalitarianism- Libertarianism scale was found to be associated with individuals' identifying that they would vote for the Progressive Conservative party, while lower scored were associated with a preference for voting for the NDP, Liberal, and Green parties. This association is critical as it connects the political party preference and ideology in Northern Ontario with established and studied political spectrums. This also demonstrates that Progressive Conservative party supporters sampled in Northern Ontario probably hold more conservative/libertarian beliefs like the limiting of government power, while the more left-leaning party supporters express more totalitarian beliefs, allowing for valid comparison to the vast literature on these ideologies.

Additionally, several exploratory analyses were conducted which revealed some interesting but expectable results. Among these were the findings that high perceived stress was linked to both lower financial security, and exposure to COVID-19 in the workplace. Differences in gender were also explored, and it was found that Male participants had higher levels of support for government restrictions than Female participants, while Female participants rated the overall severity of COVID-19 higher than did Male participants.

4.2 Interpretation of Key Findings

4.3 *Influence of Political Ideology*

As predicted, political ideology was related to covid-19-related attitudes such that right-leaning individuals tended to downplay the severity of COVID-19, expressed lower support for government mandated measures, and were less likely to endorse the COVID-19 vaccine. The results of the comparison between the Libertarianism-Totalitarianism scale and the Government Response scale was expected based on both previous literature (Choma et al., 2021; Rothgerber et al., 2020; Studdert & Hall, 2020), and more recent findings (Harper & Rhodes, 2022; Kerr et al., 2021; Perry et al., 2021), although agreement on the effect of political ideology is not universal. While the results presented above indicate that conservative ideology predicted lower acceptance of government response, Kerr and colleagues (2021) found that Democrats surveyed in the United States were more likely to distrust the government and politicians to handle the pandemic and to support government mandates. This effect links with recent work by Ruisch and colleagues (2021), who reported that while a right-leaning ideology predicted skepticism towards COVID-19, trust in political leaders like President Doland Trump played the largest role determining pandemic response. Further results from Perry and colleagues (2021) however, indicated that libertarian and conservative individuals in the United States showed reduced support and trust of the government in relation to COVID-19 restrictions. Similarly, Canadian research has indicated that compared to liberal ideology, conservative ideology is more associated with distrust of the government response to COVID-19 (Harper & Rhodes, 2022).

The attitudes around the perceived seriousness of COVID-19 were also predicted and confirmed to be associated with political ideology. This follows a growing consensus in the literature on

COVID-19, which indicates that conservative individuals are significantly more likely to express skepticism of the seriousness of COVID-19 (Latkin et al., 2021, Lund & Long 2022), and to reduce behaviours to prevent COVID-19 such as mask wearing (Hamilton & Safford, 2020). This finding is also supported for the population of the current study: Papanastasiou and colleagues (2022) recently reported that a liberal political ideology was associated with increased adherence to public health guidelines around COVID-19 in Ontario, compared to conservative ideology. Interestingly, exposure to conservative media has been recently proposed as one mechanism for this effect, with conservative media consumption in the United States being found to predict less caution and care taken for preventative measures to avoid COVID-19 (Romer & Jamieson, 2021). Conservative media surrounding COVID-19 in the United States has also been identified to be more likely to contain misinformation and conspiracy theories, potentially leading to this effect (Motta et al., 2020; Uscinski et al., 2020).

This divide between the political ideologies is juxtaposed by the response in Canada, where political leaders have been less likely to disagree with opponents over COVID-19-related issues and policy (Merkley et al., 2020). This unified front may explain some of the contrast in response between the United States and Canada, as Canadians have recently been shown to have greater caution around COVID-19 and lower vaccine hesitancy compared to Americans (Savoia et al., 2022). Nevertheless, Canada is heavily reliant on American media (Kim et al., 2007), and reporting on COVID-19 in the United States has been heavily politicized with left-leaning sources reporting substantially different versions of the news than right-leaning outlets (Mach et al., 2021). This highlights that while Canadian politicians and media outlets sources may be comparatively prone to political polarization of COVID-19 issues than those in the United States, the influence of the American media on the public zeitgeist cannot be ignored.

Additionally, the results of the comparison between the Libertarianism-Totalitarianism scale and the vaccine attitudes scale confirmed the hypothesis that conservatives were more likely to express anti-vaccination attitudes and reduced trust in the COVID-19 vaccine. This phenomenon has been robustly reported on both in relation to the vaccine hesitancy before COVID-19 (Amin et al., 2017; Rossen et al., 2019; Sarathchandra et al., 2018), and during the COVID-19 pandemic (Berg & Lin, 2021; Jiang et al., 2021; Kerr et al., 2021). This demonstrates that while COVID-19 has undoubtedly polarized opinion on vaccination, underlying issues are present with vaccination that determine a moral and political response variation between individuals.

When asked about current vaccination status, results indicated that lower or more left-leaning scores on the Libertarianism-Totalitarianism scale were significantly associated with being vaccinated with 2 doses of the COVID-19 vaccine, while higher or more right-leaning scores were associated with having 1 dose, no doses, or having refused a vaccine dose. This result is in line with the previously reported finding that negative vaccine attitudes and hesitancy are elevated amongst right-leaning individuals (Baumgaertner et al., 2018; Rossen et al., 2019). While vaccine hesitancy has been linked to political ideology, COVID-19 vaccine refusal and behavioural willingness to receive the vaccine has also been recently linked to ideology. In Norway, COVID-19 vaccine refusal was recently found to be predicted by right-wing ideology (Wollebæk et al., 2022). Similarly, Albrecht (2022) conducted an analysis of vaccination status in the United States, comparing areas with higher percentages of Republican or right-leaning voters with those higher in Democrat or left-leaning voters. He found that vaccination rates were significantly lower in those highly Republican areas, indicating that political ideology may have played a significantly role in this trend (Albrecht, 2022).

The timing of the current study likely played a role in the results gathered relating to vaccine attitudes and behaviours. During the data collection period, Ontario was in the midst of the third and most serious wave of COVID-19 in terms of hospitalization rates, which may have influenced perceptions around the risk and benefits of receiving the vaccine. Additionally, Ontario implemented an age- and risk-based rollout of the COVID-19 vaccine, which allowed certain individuals to receive a vaccination before others. Due to this, individuals who were not eligible to receive either one or both doses at the time of the study may have changed their mind over the course of the pandemic as criteria changed. Indeed, Dzieciolowska and colleages (2021) conducted a recent survey of healthcare workers across Canada, and found that while COVID-19 vaccine refusal rates were low, the majority of those who refused indicated that they would be likely to or consider receiving the vaccine in the future, often citing distrust of vaccine manufactures as their reason for this. Other studies in Canada have indicated that confidence in the vaccine and exposure to high-exposure job environments all predicted vaccination status (Reifferscheid et al., 2022).

Interestingly, no association was found between individuals' perceived stress levels and political ideology. COVID-19 presents a threatening situation, and perceived stress can result from the level of emphasis placed on this threat (Liu et al., 2021). Political ideology has previously been found to directly influence perceptions of threat, with conservative individuals being more likely to take actions to reduce threats (Jost, Stern, et al., 2017). Research from Schlenker and colleagues (2012) further showed that conservative individuals tend to experience greater life satisfaction than liberals, owning in part to their ability and drive to obtain personal control over their lives. Additionally, because COVID-19 presents an ambiguous threat, it might be expected that conservatives would be more threatened as they, as well, have been found to have a lower

tolerance of uncertainty (Jessani & Harris, 2018). As both liberals and conservatives in the present study expressed similar stress levels, this finding suggests that other variables discussed below may have a larger association to stress levels than does political ideology.

The findings from the Libertarianism-Totalitarianism scale developed by Mehrabian (1996) and the Northern Ontario political landscape of 2021 matched up well, which was a significant and expected finding. The results indicated that individuals who were higher on the Libertarianism-Totalitarianism scale were more likely to report alignment with and support for the Conservative party which was expected, as the dimension of libertarianism identified during the initial construction of the scale was found to align with the conservative values (Mehrabian, 1996). Recent results published using this scale have confirmed that in the United States, self-identified republicans and libertarians had similar scores (Hernandez et al., 2019). This is expected as libertarianism and conservatives share many of the same fundamental ideologies, such as their high regard for individual liberty and distrust of government overreach, with the difference being that libertarians are often found at the extremes of the right spectrum, beyond where conservative ideology might be located (Graham et al., 2009).

While Canada has long hosted libertarian and right-wing ideologies (Perry & Scrivens, 2016), the last decades have given these groups unprecedented access to communication and organization via the internet (Krämer, 2017). This trend is evidenced by the growing popularity of the Peoples Party of Canada, a growing far-right political party that includes anti-lockdown rhetoric in its platform (Somos, 2021). The party gained over 800,000 votes in the 2021 Federal election, with close to 5% of the popular vote (Elections Canada, 2021). While right-wing presence has been documented largely in South Western Ontario (Perry & Scrivens, 2018), little research has been conducted on contrasting this to Northern Ontario, which hosts a unique

political climate due to its history and resource extraction industries (Martin, 1999). Increased socialist ideologies due to the reliance on unionization and labour rights have led to the dominance of parties such as the NDP (Martin, 1999). Unsurprisingly in the recent 2022 Ontario election, the NDP was the top choice for the majority of ridings in Northern Ontario (CBC, 2022), matching closely with the pattern observed in the current results, and underscoring the political dichotomy between Northern and Southern Ontario. However, the results also showed that individuals who identified with the NDP scored similarly to those who identified as Liberal or Green Party voters on the Libertarianism-Totalitarianism Scale, suggesting that a reliance on the socialist policies of the NDP is more than surface deep and may express a genuine connection to more liberal ideologies. Indeed, as of March 2022, the Federal Liberal and NDP parties formed a partnership just short of a true coalition in order to pass common policies (Harvey, 2022), demonstrating the common base to these two parties.

4.4 *Influence of Perceived Stress*

Perceived stress was however found to be associated with both COVID-19 Vaccination Acceptance Attitudes and the perceived seriousness of the pandemic, although a different pattern than hypothesized emerged from the data. Those who reported either low levels or high levels of perceived stress had significantly higher or more positive scores on the COVID-19 vaccination attitudes scale. Examining the current literature on the effects of perceived stress on COVID-19 vaccination attitudes however reveals mixed results. Previously, high levels of perceived stress have been shown to be related to negative attitudes towards the COVID-19 vaccine and vaccine hesitancy (de Sousa et al., 2021; Yılmazbaş et al., 2021). As well, more recent studies have found that low levels of perceived stress related to COVID-19 has been found to be associated with negative attitudes towards vaccines and related measures (Campo-Arias & Pedrozo-Pupo,

2022). However, other recent studies have indicated that high levels of perceived stress are associated with increased vaccine acceptance and willingness (Stoler et al., 2021). Simione and colleagues (2021) measured levels of perceived stress in Italian adults during the COVID-19 lockdown and found no connection between stress levels and intention to become vaccinated.

Levels of perceived stress were found to be much higher than the norms developed with the PSS, with a mean of 19.13 compared to 13.1. However, elevated levels of stress are common during public health emergencies, and during the SARS outbreak Chua and colleagues (2004) reported a mean perceived stress level of 18.5 on the PSS-10. Similarly, recent publications examining the effect of COVID-19 on levels of perceived stress found mean levels ranging from 19.59 (Simione et al., 2021) to 17.4 on the PSS-10 (Sinta et al., 2020). Recent results examining the stress levels of doctors in rural Ontario have also indicated higher-than-normal levels (Mandal & Purkey, 2022). Increased levels of perceived stress can be linked to serious physical (Arnold et al., 2012) and mental (Bovier et al., 2004) health conditions, and are a troubling sign due to the length of the COVID-19 pandemic.

Similar to Vaccination Acceptance Attitudes, both low and high levels of perceived stress showed significantly higher scores on the Perceived Severity of COVID-19 Scale than those with moderate stress. In other words, those with moderate stress levels took fewer precautions and perceived COVID-19 as less threatening than others with higher or lower stress. Lower levels of precautions taken against COVID-19 has become increasingly common; Crane and colleagues (2021) conducted a longitudinal survey of participants in the United States and found that over a 6-month course individuals decreased the majority of their protective behaviours against COVID-19 with the exception of face-mask wearing, which increased. Similar studies examining what maintains positive attitudes toward preventive guidelines over time have found that they are

associated with higher perceived risk and stress of the pandemic (Sinharoy et al., 2021). This connection between high perceived risk and threat of COVID-19 has been strongly linked to higher perceived stress levels (Dymecka et al., 2021; Li & Lyu, 2021)

One explanation for the results of moderate stress leading to more negative behaviours towards risk and vaccination that has received some support may be related to the chronic stress conditions induced by the pandemic. After extended exposure to a stressor, adaptations occur in order to offset and protect from the response to the stress (Koolhaas et al., 2011). As the COVID-19 pandemic had continued for one year at the time of the present study, individuals became "pandemic-fatigued", no longer experiencing the same levels of concern about the disease as they initially did (Hassan et al., 2021). This fatigue has in turn been linked to lower adherence to COVID-19 protective measures, especially those which take a toll on the individual such as social-distancing measures (Petherick et al., 2021).

This however still leaves questions as to why those who reported a moderate level of stress showed the least concern, opposed to those with high or low levels of stress. One theory that may be applied to this phenomenon is the inverted-u curve of stress or the Yerkes-Dodson Law of differential performance in response to stress. This theory poses that there is an optimal level of stress needed to promote behaviour, and that either too little or too much stress causes reduced performance (Salehi et al., 2010). In the current case we seem to find the opposite however, where those with moderate levels of stress have the lowest level performance. When taken together with the concept of "pandemic-fatigue" this may make some sense: due to the chronic nature of the stress from COVID-19 these individuals who used to be in the optimal level for stress performance now have the worst performance, due to the burnout associated with the

length of the stress, a finding that might be revealed in further longitudinal designs studying the pandemic.

4.5 Interpretation of Exploratory Analyses

Several trends emerged from the data during exploratory analysis. In regards to perceived stress, high levels of stress were found to be associated with increased weight gain over the course of the pandemic. This finding is in line with previous work linking high stress to increasing caloric consumption and weight gain (Emond et al., 2016), and has been linked to COVID-19 quarantines and lockdowns globally (Sánchez-Sánchez et al., 2021; Zachary et al., 2020). As well, exposure to COVID-19 in the workplace was linked to higher perceived stress levels than those with no exposure risks. This also corroborates with previous research on job exposure to COVID-19 in both medical professionals (Abbas et al., 2021), and retail workers (Mayer et al., 2022). Finally, we found that high levels of perceived stress were also related to low levels of financial security. This finding has been robustly reported on in the literature (Algren et al., 2018; Ursache et al., 2015), and provides further validity for the sample gathered here.

Exploratory analysis conducted on the effect of gender revealed some significant results as well. Support for government measures to combat COVID-19 was found to be highest among men compared to women. This finding is supported by a recent publication that looked longitudinally at gender differences in support for COVID-19-related government policy, and found that while initially both men and women expressed similar support, by the third wave of the pandemic the gap had widened and women expressed much lower support than men (Mazza & Scipioni, 2022). An interesting explanation for this result may be linked to the gender difference in the perceived severity and threat of COVID-19. Our analysis revealed that women perceived COVID-19 as

more serious and threatening than men, a finding supported by other current studies (De Coninck et al., 2020; Niño et al., 2021). As women may perceive the pandemic to be more threatening, they may have been more likely to lose faith in the government measures that they perceived to not be working to protect them. An alternative explanation could also be that women may have been more sensitive than men to COVID-19 “fatigue”. This explanation has recent evidence in the literature; Leigh and colleagues have (2022) reported that women in Canada were more likely to report negative effects from the stress of the pandemic, leading to impacts on mental and social health.

4.6 Limitations and Future Research

The current study is not without limitations, some of which include: issues of standardization against other COVID-19-related measures, and the changing nature of the pandemic; the lack of literature on Northern Ontario’s political environment; high levels of malicious online survey spam received; and methodological problems with the questionnaire including lack of labelling around Federal and Provincial political party choices. However, these limitations do not detract from the findings gathered, and rather allow potential avenues for future research to explore. Areas for future research include: unifying reviews of the COVID-19 literature to form scientific consensus and develop assessment tools; further research into the how the unique history of Ontario, and specifically the North, shapes current political ideology and behaviours; application of the basic research gathered to inform future decision-making during pandemics and other public crisis.

The rapidly evolving nature of the COVID-19 pandemic has made it challenging to conduct standardized research that is easily compared to other studies. In the past decade, the social

sciences have come under scrutiny over the findings that key studies once thought to be incontrovertible facts were unable to be replicated. This so called “replication crisis” has led to many calling for reform and standardization of the methods used in many of the social sciences, mainly the field of social psychology (Shrout & Rodgers, 2018). As COVID-19 has dominated the research landscape over the past two years, close to 5 million studies have been published so far, with that number increasing daily (Alphabet, n.d.). This vast array of literature, coupled with the unique nature of the pandemic, raises concerns that the COVID-19 era of research may be difficult to replicate and will contribute to the lack of trust in the science behind Public Health recommendations (Conley & Johnson, 2021).

Fortunately, the massive number of studies conducted on COVID-19 allows for both validating metanalysis reviews to be conducted, along with new scales to be tested and validated. While it is true that many studies have and continue to be conducted around COVID-19, researchers should strive to use already validated scales, in combination with newly developed scales to assess unique aspects of the pandemic. Numerous scales have already been developed and are now being validated that will allow for better comparisons, such as the COVID-19 Vaccine Acceptance scale (Fan et al., 2021), the Fear of COVID-19 Scale (Caycho-Rodríguez et al., 2020; Midorikawa et al., 2021), and the COVID-19 Stress Scale (Taylor, Landry, Paluszek, Fergus, et al., 2020). While the current research was designed and conducted before many of these scales had been validated thus excluding their use, the use of previously developed and well-validated scales including the PSS-10 and the Mehrabian Libertarianism-Totalitarianism scale allow this research to be compared and validated against similar research now and in the future.

Another issue the current study faces are the comparison to other work conducted on the social and political landscape of Northern Ontario. While findings of the current research do align well with similar studies comparing responses from individuals in the United States and Canada, due to the unique parliamentary political system and the large number of registered federal and provincial parties (Bjørnskov & Potrafke, 2012), comparisons to the two-party presidential system of the United States are not perfect (Mainwaring, 2016). When examining the local differences in political ideology this becomes even more apparent, as Northern Ontario presents unique characteristics that other rural areas in the province do not share, such as a larger proportion of socialist views owing to the reliance on unionized mining and resource extraction industries (Bray & Thomson, 1996; C. Martin, 1999). This in turn means that those with liberal ideology greatly outnumber those with conservative ideology, further making it difficult to draw conclusions from such a small percentage of the sample. The results from the current study contained 86.1% of individuals who identified themselves as supporters of the Liberal, NDP, or Green parties, while only 13.9% supported the Progressive Conservatives. However, these observed percentages aligns with the voting patterns of Northern Ontario in the 2018 Provincial Election (Global News, 2018), and the 2021 Federal Election (CBC, 2021), further providing validity for the comparison of the sample collected to the population. Interestingly, little recent research has been done comparing the self-reported political ideology of Ontarians to their voting preferences, making this an area for future research to confirm the results presented here.

Troublingly, during the first few days of releasing the online survey on Facebook, dozens of malicious spam responses were received. These spam responses continued over the course of the data collection period, amounting to hundreds of invalid responses. Web surveys are particularly vulnerable to invalid responding compared to traditional surveys, where participants may be

incentivised to answer multiple times in order to receive a reward (Mason & Suri, 2012; Teitcher et al., 2015). Any online research is susceptible to these attacks, but research on COVID-19 in particular is vulnerable due to the polarizing topic (Hart et al., 2020). There is evidence that online misinformation around COVID-19 has been maliciously spread, leading to hate groups on social media manipulating and targeting contents on social media (Ferrara et al., 2020; Velásquez et al., 2021). While filtering these responses was attempted in the current study, research is still needed to determine the best way to prevent future data from being contaminated by spam (Teitcher et al., 2015).

Finally, several limitations were identified with the final questionnaire that participants answered and the analysis of the scales utilized, including issues with scale positivity bias, and ambiguity between Federal and Provincial parties and issues on the questionnaire. The Support of Government COVID-19 Measures scale had more positively written items than negatively written which may have introduced a positivity bias to the scale. Additionally, participants were asked which party they would choose to vote for if they had to vote today, but were not instructed if they were voting for Federal or Provincial parties. As one of the choices of who to vote for included the “Progressive Conservative Party”, a party that no longer exists on the Federal level but does at a Provincial level, this may have influenced participants choice because they may have felt unrepresented. By including the label of “Progressive” in the questionnaire, this may have introduced a bias in terms of a political ideology more inclined toward the center than toward the right-wing of the spectrum.

4.7 Conclusion

Understanding an individual's attitudes and beliefs around any issue is a challenge, and the controversy around the topic of COVID-19 makes this a particularly interesting topic to examine. In the present study we examined the associations between both political ideology and perceived stress on attitudes and behaviours towards the COVID-19 pandemic. It was found that conservative/libertarian or more right-leaning and conservative political ideology was significantly associated with lower levels of support for government measures to contain the pandemic, a lower level of perceived seriousness and threat of COVID-19, as well as lower levels of acceptance and uptake of the COVID-19 vaccine. As well, contrary to expectations, both low and high levels of perceived stress were associated with higher levels of perceived seriousness of the COVID-19 pandemic, and approval for the COVID-19 vaccine. The current research furthers the growing knowledge base around how individuals responded to the COVID-19 pandemic, and presents new research directions for exploration in order to understand and compare this topic to future public health crisis.

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Appendix A - Survey Questionnaire Demographics

Section 1: Demographics

What is your age?

_____

What is your preferred gender?

- Male
- Female
- Non-Binary
- Other/prefer not to say

What is your ethnicity?

- Caucasian
- Indigenous
- Middle Eastern
- African
- Caribbean
- South Asian
- East Asian
- Mixed
- Other

What is the highest level of education you have completed or are currently completing?

- Lower than highschool
- High school
- College or University
- Masters or Doctoral

If you have or are currently completing post secondary education, please name the program.

_____

What is your current employment status?

- Full-time employed
- Part-time employed
- Unemployed
- Student

Do you have any pre-existing health conditions that make you higher risk for COVID-19?

- Yes
- No

Weight and eating.

- **My weight has changed significantly since the start of the COVID pandemic.**

0	1	2	3	4

-
- If so, estimate by how much or how little (lbs).
- _____
- The amount I am eating out at restaurants or fast food has changed significantly since the start of the COVID pandemic in March of 2020.

0	1	2	3	4

-
- Please provide any additional comments about the study that you feel the researchers should know below. As well, what do you think the purpose of this study is?
- _____

  _____

Appendix B - Survey Questionnaire Political Scale

Section 2: Political Ideology

Libertarianism-Totalitarianism Scale (Mehrabian, 1996).

Please use the following scale to indicate the degree of your agreement or disagreement with each of the statements below. Record your numerical answer to each statement in the space provided preceding the statement. Try to describe your attitudes accurately and generally.

7 = very strong agreement

6 = strong agreement

5 = agreement

4 = neither agreement nor disagreement

3 = disagreement

2 = strong disagreement

1 = very strong disagreement

Excessive taxation is a prime example of the way in which governments take away individual freedom.

1	2	3	4	5	6	7

We need a stronger government to create a better society.

1	2	3	4	5	6	7

Government programs discourage individual responsibility and achievement while fostering dependency and failure.

1	2	3	4	5	6	7

In my kind of ideal society, all basic needs (food, housing, health care, education) will be guaranteed by the government for everyone.

1	2	3	4	5	6	7

The more powerful a government becomes, the greater is the risk that it will become

corrupt and unresponsive to the will of its people.

1	2	3	4	5	6	7

A fair society is not possible without strict and comprehensive government controls.

1	2	3	4	5	6	7

Individuals create wealth and governments tax it away to promote the interests of those in control.

1	2	3	4	5	6	7

Individual freedom and opportunity are greater when government is smaller and less able to intervene in social and economic areas.

1	2	3	4	5	6	7

Government laws and regulations make it possible to have a moral society.

1	2	3	4	5	6	7

I am entitled only to the fruits of my own labor; not to that of others passed on to me through government handouts.

1	2	3	4	5	6	7

I am willing to exchange my personal freedoms for greater security provided by government programs.

1	2	3	4	5	6	7

We need strict government intervention to ensure that everyone will succeed socially and economically.

1	2	3	4	5	6	7

Government agencies spend our money carelessly and wastefully, which is natural, since they don’t have to earn it.

1	2	3	4	5	6	7

Most of our economic woes are caused by repeated and massive government meddling in the economy.

1	2	3	4	5	6	7

Our government is not active enough; we need more laws and government programs to regulate and improve our lives and dealings with each other.

1	2	3	4	5	6	7

As a government gets bigger and more powerful, its citizens become poorer and less free.

1	2	3	4	5	6	7

For me, government-imposed social order and security are more important than individual freedom.

1	2	3	4	5	6	7

Our society can improve only with more government controls over individuals and businesses.

1	2	3	4	5	6	7

My ideal government would be very small and would only perform a very few essential functions.

1	2	3	4	5	6	7

Government must limit our individual freedoms so as to prevent unchecked selfishness, greed, and immorality.

1	2	3	4	5	6	7

Choose which of the following parties would be your first choice to vote if you had to decide today.

- Liberal
- NDP
- Progressive Conservative
- Green

If you couldn't vote for your preferred political party, who would be your second choice?

- Liberal
- NDP
- Progressive Conservative
- Green

Appendix C - Survey Questionnaire Perceived Stress Scale

Section 3: Perceived Stress

Cohen, S. (1994). *PERCEIVED STRESS SCALE*. Retrieved from www.mindgarden.com

0 = Never 1 = Almost Never 2 = Sometimes 3 = Fairly Often 4 = Very Often

1. In the last month, how often have you been upset because of something that happened unexpectedly?

0	1	2	3	4

2. In the last month, how often have you felt that you were unable to control the important things in your life?

0	1	2	3	4

3. In the last month, how often have you felt nervous and “stressed”?

0	1	2	3	4

4. In the last month, how often have you felt confident about your ability to handle your personal problems?

0	1	2	3	4

5. In the last month, how often have you felt that things were going your way?

0	1	2	3	4

6. In the last month, how often have you found that you could not cope with all the things that you had to do?

0	1	2	3	4

7. In the last month, how often have you been able to control irritations in your life?

0	1	2	3	4

8. In the last month, how often have you felt that you were on top of things?

0	1	2	3	4

9. In the last month, how often have you been angered because of things that were outside of your control?

0	1	2	3	4

10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

0	1	2	3	4

Appendix D - Survey Questionnaire Government Support Scale

Section 4: COVID-19

Government approval.

0 = Strongly Disagree 1= Disagree 2 = Neither agree or disagree 3 = Agree 4 = Strongly Agree

The government has done a good job at handling travel restrictions during the pandemic.

0	1	2	3	4

The government has done a good job of providing public health guidelines (eg. mask wearing, social distancing) during the pandemic.

0	1	2	3	4

The government has done a good job in managing and regulating businesses (eg. mandating closures, restricting numbers of people) during the pandemic.

0	1	2	3	4

The government has done a good job of providing support (CERB benefits, time off work while isolating) for those affected by the pandemic.

0	1	2	3	4

The government was well prepared for the pandemic.

0	1	2	3	4

Appendix E - Survey Questionnaire Seriousness of the Pandemic Scale

Seriousness of the pandemic.

It is important to follow instructions from public health (eg. mask wearing, social distancing).

0	1	2	3	4

Information and news about the danger of COVID-19 appears to be exaggerated by the media.

0	1	2	3	4

The public needs to take the pandemic seriously.

0	1	2	3	4

COVID-19 is something that poses a serious risk for me or my family.

0	1	2	3	4

I am willing to change plans to avoid a situation with a higher chance of catching COVID-19. Eg. avoiding busy stores, not visiting friends who have travelled recently.

0	1	2	3	4

Where do you receive most of your news about the COVID-19 pandemic?

- Facebook and other social media
- Newspapers / news websites
- Radio / podcasts
- Friends and family
- Healthcare provider

Other:_____

Those with underlying health conditions should receive government assistance if they are at risk or feel unable to work until the pandemic is over.

0	1	2	3	4

Appendix F - Survey Questionnaire Vaccine Hesitancy Scale

Vaccine hesitancy scale.

Getting vaccines is a good way to protect myself from disease

0	1	2	3	4

Vaccines are effective

0	1	2	3	4

Write a short explanation to describe how you believe a vaccine works. It is ok to write "I don't know."-

_____

_____

Being vaccinated is important for the health of others in my community.

0	1	2	3	4

The information I receive about vaccines from the government is reliable

and trustworthy.

0	1	2	3	4

Generally, I do what my doctor or health care provider recommends about

Vaccines

0	1	2	3	4

New vaccines carry more risks than older vaccines

0	1	2	3	4

I am concerned about serious adverse effects of vaccines / the COVID-19 vaccine

0	1	2	3	4

I have already or will choose to receive the COVID-19 vaccine.

0	1	2	3	4

Which best describes where you are with the COVID-19 vaccine?

- I have had my first vaccine shot
- I am completely vaccinated
- I have not yet received a vaccine
- I had the option but chose not to receive the vaccine yet

If you answered that you will not be getting the COVID-19 vaccine, please write a brief explanation of why.

_____

_____

I would be willing to pay to get the COVID-19 vaccine if it were available.

0	1	2	3	4

Being vaccinated against COVID-19 should be mandatory.

0	1	2	3	4

It is fair for certain people to receive a vaccine first.

0	1	2	3	4

Please rank the following groups according to the order of priority they should be given in terms of receiving a vaccine for COVID-19. (For example, the highest priority group should be assigned a value of 1, the next highest should be assigned a value of 2, etc.):

- Young children
- The elderly
- Those with pre-existing conditions
- Front line workers
- Pregnant women

Appendix G – Research Approval

APPROVAL FOR CONDUCTING RESEARCH INVOLVING HUMAN SUBJECTS

Research Ethics Board – Laurentian University

This letter confirms that the research project identified below has successfully passed the ethics review by the Laurentian University Research Ethics Board (REB). Your ethics approval date, other milestone dates, and any special conditions for your project are indicated below.

TYPE OF APPROVAL / New X / Modifications to project / Time extension

Name of Principal Investigator and school/department	Matthew Scott, supervisor Michael Emond, Psychology
Title of Project	Examining the connection between perceived stress and political ideology on responses to COVID-19
REB file number	6020965
Date of original approval of project	April 08th, 2021
Date of approval of project modifications or extension *(if applicable)*	
Final/Interim report due on: *(You may request an extension)*	April 08th, 2022
Conditions placed on project	

During the course of your research, no deviations from, or changes to, the protocol, recruitment or consent forms may be initiated without prior written approval from the REB. If you wish to modify your research project, please refer to the Research Ethics website to complete the appropriate REB form.

All projects must submit a report to REB at least once per year. If involvement with human participants continues for longer than one year (e.g. you have not completed the objectives of the study and have not yet terminated contact with the participants, except for feedback of final results

to participants), you must request an extension using the appropriate LU REB form. In all cases, please ensure that your research complies with Tri-Council Policy Statement (TCPS). Also please quote your REB file number on all future correspondence with the REB office.

Congratulations and best wishes in conducting your research.

Rosanna Langer, PHD, Chair, *Laurentian University Research Ethics Board*

Appendix H : Informed Consent

Informed consent

Thank you for choosing to complete this survey! The goal of this research is to explore the links between how stress and political beliefs influence how we react to COVID-19 related issues. The survey will take around 15 minutes to complete and will ask questions regarding your political ideology, a measure of your stress levels, and questions relating to COVID-19 and vaccination.

Participation in this survey is completely voluntary and you are free to withdraw from the research at anytime. This consent form will ask you for your permission to use your responses for statistical analysis and research publishing. Your identity and any contact information will remain anonymous and will not be linked to, written about, or available to anyone besides the researchers themselves.

Please note that the survey is available in English only, and as well those who are not of legal age or cannot legally consent to participate in this survey will be excluded. Should you have concerns about the contents of the survey and wish to contact the researchers please find there contact information attached to the bottom of this document. Additionally, participants may contact the Research Ethics Officer who is not attached to the research team regarding possible ethical issues or complaints about the research itself.

I agree to voluntarily participate in the research study and am legally of age and able to give my consent. I am aware of the purpose of this research and understand that I can withdraw from the study at anytime.

- Agree
- Disagree

Contacts:

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Dr. Michael Emond, Associate Professor, Department of Psychology | 705-675-1151 ext. 4246 | memond@laurentian.ca

Research Ethics Officer, Laurentian University Research Office | 705-675-1151 ext. 3213, 2436 or toll free at 1-800-461-4030 | ethics@laurentian.ca

Appendix I – Survey Debriefing

Survey Debriefing

Thank you for your time and effort in completing the survey on examining how political opinions and stress relates to attitudes and responses to COVID-19!

This research was started to try and figure out why people have different reactions and opinions to the COVID-19 pandemic. Some people seem to want to follow government measures like mask wearing and social distancing, and want to receive a vaccine while others do not. As it is very important that these measures are followed to ensure we are all safe, understanding these individual differences may be important to better get the message across in the future. The more we understand about what factors may relate to those who don't see something like COVID-19 as a danger the better we can help reach them and provide personalized answers to their questions and concerns.

In this study we asked you about your stress and your political beliefs. This was because we guessed that people who are more stressed out may be more likely to take COVID-19 seriously and follow directions. As well we predicted that those who are more right leaning or conservative would be less likely to follow government instructions and support COVID-19 laws.

For further reading on the topics researched in this area please see:

Schneiderman, N., Ironson, G., & Siegel, S. D. (2005). Stress and health: Psychological, behavioral, and biological determinants. In Annual Review of Clinical Psychology (Vol. 1, pp. 607–628). NIH Public Access. https://doi.org/10.1146/annurev.clinpsy.1.102803.144141

Again, thank you for your time in contributing to research and the scientific community. Please feel free to reach out to the researchers for more information about the study, possible results and publications, or to withdraw your data and consent at any time. If you have concerns about the research please reach out to either the researcher or the research supervisor.

Contacts:

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Dr. Michael Emond | Associate Professor | Department of Psychology | 705-675-1151 ext. 4246 | memond@laurentian.ca

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Appendix J – Recruitment Advertisement