Canadian teachers' attitudes toward change, efficacy, and burnout during the COVID-19 pandemic

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ABSTRACT

Canadian teachers ($N = 1626$) took part in a longitudinal, national survey conducted at two points early in the COVID-19 pandemic. Results indicated that teacher efficacy, attitudes toward change, and perceptions of administrative support were correlated with teacher resilience and burnout at the onset of the pandemic. Over the first three months of the pandemic, teachers demonstrated increasing exhaustion and cynicism but also increased efficacy for classroom management and increased sense of accomplishment. In addition, teachers' cognitive and emotional attitudes toward change became more negative. Implications of the deficit of resources to demands that result in teacher stress and burnout over time are discussed.

The 2020 COVID-19 pandemic presented an urgent need for a global, unplanned change in schooling: As school buildings around the world closed in order to protect children's and educators' health, many educators also quickly pivoted to remote teaching involving technology. Educational researchers have repeatedly stressed the importance of teachers as the frontline workers in educational reform (Kin and Kareem, 2016), and the dedicated, sustained behaviours of teachers will be imperative to a successful educational response to the current pandemic. However, in order to understand teachers' behaviours related to COVID-19, models of planned behaviour suggest that teachers' attitudes must also be considered (Ajzen, 2015). Given the attention to attitudes as precursors of behaviours, we investigated how teachers' attitudes toward change and teachers' attitudes toward technology related to resilience and burnout while teaching during the initial months of COVID-19 pandemic. Moreover, we were interested in the impact of two variables shown to support successful teaching under more typical circumstances: (1) support from administrators, and (2) teaching efficacy (Kin & Kareem, 2018) and how they might also affect teachers' resilience and burnout during a pandemic.

Defining attitudes toward change

Understanding the nature of teachers' attitudes toward change (TATC) is essential to understanding their intentions to carry out desired behaviours. The term 'attitudes toward change' however, is con-

tested in the literature, and the use of multiple, overlapping labels to describe it has hampered its collective conceptual development (Bouckenooghe, 2009).

Despite these challenges, some consensus has developed in defining attitudes toward change and its components, a definition rooted within the seminal work of Ajzen (1985). Ajzen (1985) proposed the theory of planned behaviour to describe the processes that determine whether an individual performs a specific behaviour. Although the theory of planned behaviour was not originally proposed as a way to change behaviour, it could serve as the basis of such an initiative (Ajzen, 2015), as one is likely to discontinue one behaviour when they begin the next (Berger, 2020). Some of the main components of Ajzen's (1985) theory are beliefs, attitudes, and intention for behaviour. Similarly, in defining attitude towards organisational change, Vakola and Nikolaou (2005) acknowledged patterns in a person's thoughts, feelings, and behaviours towards change in an organisation. Likewise, other scholars (Kin and Kareem, 2018) recognised the same three dimensions when defining attitudes toward change in teachers:

"Cognitive responses to change are defined as teachers' beliefs about the significance and necessity for change, and the extent of how school change would benefit them personally and in the context of the organisation. Affective responses to change are viewed as teachers' feelings about the change, particularly the feelings linked to satisfaction or anxiety about the change. Behavioural reaction to change refers to the actions for or against change i.e. the extent to which teachers would support or resist change." (p. 6)

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Thus, research has collectively supported a consensus that attitudes toward change encompass three dimensions including cognitive, affective, and behavioural components (Kin and Kareem, 2017).

Barriers to change

Behavioural change can be difficult in the face of five barriers, according to Berger (2020). Berger provided an acronym, REDUCE, to describe the five barriers: Reactance, endowment, distance, uncertainty, and corroborating evidence. *Reactance* refers to people's reactivity to being directed, instead of being empowered to make their own choices. Berger (2020) suggested that pushing people to enact specific behaviours runs the risk that they will respond to this challenge to their own agency by pushing back against the change. *Endowment* refers to one's comfort in and value for what is familiar. *Distance* refers to how far outside one's comfort zone one would have to move in order to adopt the behaviour. In both the cases of endowment and distance, making the change comfortable and easy supports adoption of new behaviours (Berger, 2020). *Uncertainty* refers to the level of discomfort or suspicion that one has for the new behaviour. By decreasing the risk of trying the new behaviour and by decreasing the cost-to-reward timeframe, uncertainty may be lowered (Berger, 2020). *Corroborating evidence* refers to the need for the new behaviour to be explained and endorsed by multiple parties within a short time frame. Likewise, Azjen (2005) recognised the influence of norm groups on behaviour. Reassurance through support, experience, and corroborating evidence serve to decrease uncertainty. Berger (2020) posited that the key to convincing individuals to adopt new behaviours is to break down these barriers.

Teachers' attitudes toward change

Supporting teachers in enacting the teaching behaviours necessitated by COVID-19 must address the three components of attitudes (cognitive, affective, and behavioural intention), and must also address barriers to change. First, teachers' beliefs must be addressed. Beliefs refer to whether individuals believe in the reasons for the change in behaviour, and whether they perceive that the new behaviour will result in a better state than the current state (Berger, 2020). People who do not believe in the reasons for the new behaviour or are suspicious of them are more likely to resist them (Berger, 2020). In the case of the COVID-19 pandemic, there were varied cognitive responses to moving to online teaching. While some teachers believed this was a logical decision as way to maintain both learning and safety, others believed that online lessons highlighted inequities (Sokal, Eblie Trudel, & Babb, 2020b), and were an unnecessary burden on teachers and parents (Newcamp, 2020), suggesting reactance was a factor.

Second, teachers' feelings about the change must be addressed. While teachers may understand the need for remote teaching and learning on a cognitive level, they might resist it emotionally (Kin & Kareem, 2018), based on factors such as their endowment to face-to-face teaching (Sokal, Eblie Trudel, & Babb, 2020b) or feelings of concern that they are less effective teachers when teaching remotely (Sokal, Eblie Trudel, & Babb, 2020b). Berger's concepts of distance (from one's comfort zone) and uncertainly come in to play, as lack of teaching efficacy in the new context may cause teachers to feel negative about the changes demanded of them. Efficacy is also recognised as salient in Azjen's (1985) planned behaviour theory. Teaching efficacy can be defined as one's self-perceptions of their capacity to affect student performance (Tschannen-Moran, Hoy & Hoy, 1998). Tschannen et al. (1998) established that teaching efficacy is not a global construct, as an individual teacher might have high efficacy in one teaching context but not in another. Within the current context, teachers who may have perceived high efficacy in their school-based teaching may experience efficacy differently, given the demands of online learning, the lack of face-to-face contact with students, and the need to balance their home life demands with concurrent teaching demands. Alternatively, while teachers may

have initial decreases in efficacy in light of the new demands, their efficacy may recover over time as they learn to adapt to the new situation or as they take advantage of external resources available to them.

Of particular concern is teachers' feeling about using technology as the main mode of teaching. Given the one of the most significant changes in teaching practice provoked by the pandemic is the move to online teaching, attention to teachers' attitudes toward technology is an important factor to consider when examining their feelings. Al-Fudail and Mellar (2008) coined the term "technostress" to describe the state of teachers who were required to use technology in their teaching but perceived neither internal (e.g. skills and experience) nor external supports (e.g. training and technology support) to do so successfully. Azjen (2015) suggested that studies that add additional measures to one of the constructs of the theory of planned behaviour (Ajzen, 1985) can improve the prediction of behavioural intention and can offer meaningful information. Thus, examination of technostress would assist in understanding teachers' affective responses to teaching online.

The final variable in Ajzen's (2005) model is behavioural intention. Once teachers cognitively support the new behaviour and accept it emotionally, it is more likely that they will *intend* to enact the behaviour. Without attention to beliefs and attitudes however, it is unlikely that new behaviours will be initiated or maintained (Bouckenooghe, 2009). Moreover, it is important to decrease the barriers and provide the resources that allow the individual to move from intended behaviour to actual behaviour (Ajzen, 2005, 1985). When all these conditions are in place, an individual is likely to carry out the behaviour—in this case the behaviour is teaching successfully in a pandemic.

Providing resources and breaking down barriers: a theoretical model

The last step before action—decreasing barriers and ensuring adequate resources– is especially salient as teachers move from face-to-face to remote teaching, as contextual factors are important to attitudes about change (Kin & Kareem, 2018). Bakker and Demerouti (2007) offered a model by which job demands and resources can be understood in various contexts in terms of their effects on teacher stress and burnout, an important consideration during a pandemic. In the job resources-demands model (Bakker & Demerouti, 2007), job demands are understood to be fluid, and job resources are understood to include both contextual resources provided by employers (e.g. supportive leaders) as well as personal resources such as teacher efficacy and self-care practices. As such, this model affords the flexibility for application even in unusual contexts such as a pandemic (Sokal, Eblie Trudel & Babb, 2020a).

The crux of the jobs resources-demands model is an individual's subjective appraisal of the combined influence of their job demands and resources (Bakker & Demerouti, 2007). Teachers who perceive that they have the resources required to meet their job demands are able to cope well and are considered resilient. In the context of the planned behaviour model (Ajzen, 1985), these teachers—if they hold positive beliefs and attitudes—would have effective resources and removal of barriers that would allow them to enact successful teaching. In contrast, teachers who perceive a deficit of resources when compared to job demands experience stress (Bakker & Demerouti, 2007). These teachers may have negative beliefs and feelings about the change, or they may have positive beliefs and feelings but insufficient resources or overwhelming barriers (Ajzen, 2005). In either case, their ability to enact successful teaching will be challenged and will likely result in stress.

High levels of stress over an extended period of time can lead to teacher burnout (Alarcon, 2011). Teachers who are burning out have more conflict with students, less satisfactory relationships with them, and their students have lower academic outcomes (Alarcon, 2011; Arens & Morin, 2016; Clunies-Ross, Little & Kienhuis, 2008; Collie & Martin, 2017; Harmsen, Helms-Lorenz, Maulana & van Veen, 2018; Klusmann, Richter & Lüdtke, 2016). These teachers are also more likely to leave the profession (Harmsen et al., 2018). Given all these poor out-
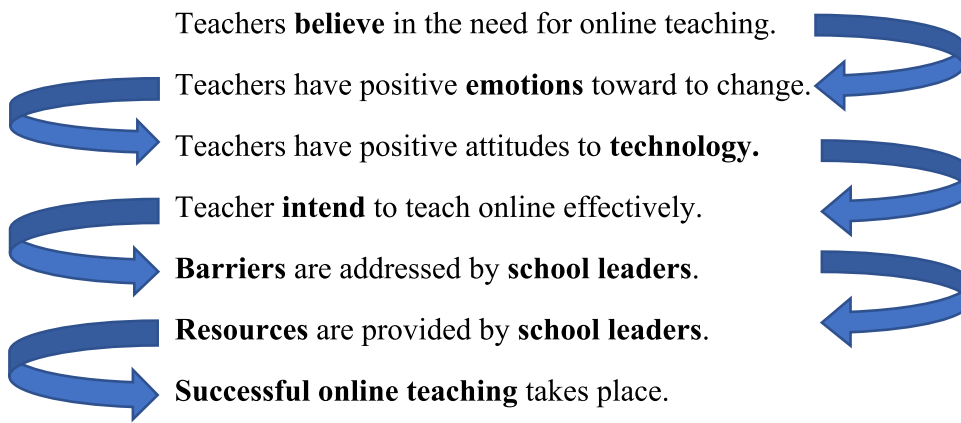
Teachers **believe** in the need for online teaching.

Teachers have positive **emotions** toward to change.

Teachers have positive attitudes to **technology.**

Teacher **intend** to teach online effectively.

Barriers are addressed by **school leaders**.

Resources are provided by **school leaders**.

Successful online teaching takes place.

Fig. 1. *Pathway to behaviour.*

comes, paying attention to the stress level of teachers by breaking down barriers and providing resources to allow them to meet their job demands is essential.

Burnout is conceptualised by Maslach and Jackson (1981) as a continuum, and their proposal of three progressive stages of burnout has been described and validated in the research related to teachers (Maslach, Jackson & Schwab, 1996). The first stage, *exhaustion*, is characterised by emotional and physical fatigue resulting from having too many demands and not enough resources to meet them. The next stage, *cynicism*, is characterised by an increase in apathy, decrease in empathy, and feelings of resentment or blame for others in the educational endeavour–administrators, parents and students, for examples. The final stage of burnout is a *lack of accomplishment* where teachers perceive that the job is impossible and no longer believe they are able to teach successfully. By conceptualising burnout into three stages, this model allows us to trace its progression in relation to teachers' cognitive, affective, and behavioural responses to change. Moreover, the potential concurrent effects of teacher efficacy and attitudes toward technology can also be examined.

Another important factor in teachers' beliefs, feelings, and behaviours about change is effective leadership. Past research on planned changes in schools has specifically pointed to the importance of the principal in the change process. Kin, Kareem, Nordin and Bing (2018) found that principals were viewed as significant supports to teachers during several stages of change including capacity building, defusing resistance, and institutionalising. This research supports the importance of leaders in breaking down the barriers to change (Berger, 2020). In fact, Kin et al. (2018) found that the change leadership competencies of principals were more influential than were teachers' attitudes toward change.

Fig. 1 presents an infographic of the processes predicted by the literature to take place when teachers teach successfully online. When all of these processes are supported (beliefs, emotions, and intentions for behaviour) and when resources and barriers are addressed through leadership, it is likely that teachers will cope with the demands of online teaching (this being the desired behaviour). Deficits in any of these stages, however, could contribute to teachers' stress and prompt teachers to begin to burn out. Given the evidence in the research literature about educational change during normal times, the current study investigated the following research questions:

Q1 Are teachers' attitudes toward change, teaching efficacy, and attitudes toward technology correlated with one another and with teacher resilience and burnout during the initial stages of a pandemic?

Q2 Do teachers' attitudes toward change, perceptions of principal support, teaching efficacy, and attitudes toward technology, teacher resilience, and burnout change over time during the initial stages of a pandemic?

Method

Design

The current study, as part of a larger study (Sokal, Eblie Trudel & Babb, 2020a and b), was approved by the researchers' University Human Research Ethics Board as meeting the standards of the TCPS-2 (Human Ethics certificate number 14,993). It was funded by an Engage grant from the Social Sciences and Humanities Research Council of Canada to the primary investigator. The study procedures and measures were described in earlier publications that focused on the job resources and demands (Sokal, Eblie Trudel & Babb, 2020a) and the qualitative interviews (Sokal, Eblie Trudel & Babb, 2020b) using only the April survey sample sub-sample. The current study is a mixed-methods design, based on two surveys including the entire sample conducted in April and June 2020 and follow-up interviews in May 2020. Both surveys were conducted when all schools in Canada had completed the spring break, and teachers in Canada were teaching remotely. In terms of recruitment, the online survey link was shared through email with professors at universities in Canada as well as teachers' professional organizations with the request that they share it with their colleagues employed in the field of kindergarten to grade twelve teaching in Canada. The snowball method of sampling was used, as each participant was asked to share the link with their own teacher contacts. Teachers who clicked on a link accessed a consent form and an online survey housed on Survey Monkey. The 92-question survey was anonymous and required approximately 15 min to complete. Participants were asked to generate a codename to be used to link their survey data to subsequent survey data collection in June and September 2020, as part of the larger longitudinal study. After the April survey, Zoom was used to interview 12 teachers purposely selected to represent the geography, age, experience, education, and teaching assignments of the larger sample.

Measures

Demographics

Teachers were asked to describe various demographic characteristics such as gender, age, years of teaching experiences, and level of education.

Resilience and burnout

Teachers were asked to indicate their current stress levels on three measures. Stress and coping were measured using two global statements, as validated by Eddy, Herman and Reinke (2019). They were, "How stressful is your job right now?" (measured on a 10-point Likert scale with 1 being low and 10 being high) and "How well are you coping with the stress of your job right now?" (measured on a 10-point Lik-

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Table 1

Demographic information.

	April/May *n*	June *n*
Province		
British Columbia	49	3
Nova Scotia	335	111
Alberta	58	28
Saskatchewan	102	22
Manitoba	595	176
Ontario	11	2
New Brunswick	107	6
Alberta	58	28
Newfoundland and Labrador	2	2
Northwest Territories	1	0
Prince Edward Island	6	0
Quebec	7	0
Gender		
Male	195	56
Female	1069	288
Other	2	0
Don't wish to say	9	4
Age		
Under 25	32	11
26–30	191	33
31–40	409	112
41–50	420	103
Over 50	223	89
Teaching Experience		
Under 1 year	41	14
2–5 years	214	32
6–10 years	240	69
11–15 years	260	75
Over 15	520	157
Education		
Less than Bachelor's degree	3	0
Bachelor's degree	682	104
Some graduate work	225	180
Masters	363	59
PhD	2	5
Position Type		
Permanent	1106	314
Term	165	32
Supply/Substitute	3	0

ert scale with 1 being low and 10 being high). The resilience score was calculated by subtracting the level of perceived stress from the level of perceived coping. Thus, a positive resilience score would indicate that a teacher had adequate coping resources to address stress, whereas a negative score would indicate that a teacher had insufficient coping resources to address their perceived stress. Teacher stress was also measured using the Maslach Burnout Inventory for Educators (Maslach & Jackson, 1981). This is a 22-item instrument that measures the characteristics of burnout, including exhaustion, cynicism, and personal accomplishment (Maslach et al., 1996). It uses a 7-point Likert scale indicating the frequency with which educators agrees with the statements: 0 (never); 1 (a few times since beginning teaching at home); 2 (once a month or less); 3 (a few times a month); 4 (one a week); 5 (a few times a week) 6 (every day). Three examples of statements are: "I feel emotionally drained from work" (exhaustion); "I don't really care what happens to some students" (cynicism); and "I have accomplished many worthwhile things in this job" (accomplishment).

Teaching efficacy

Teaching efficacy was measured using the Teacher Sense of Self-efficacy scale (Tschannan-Moran & Hoy, 2001). This measure includes 12 questions related to three aspects of efficacy, and each question was on a Likert scale from 1 (not at all) to 9 (a great deal). Sample items include, "In your current work situation, to what extent can you provide an alternative explanation or example when students are confused?" (efficacy with strategies); "In your current work situation, to what extent

can you control disruptive behaviour?" (efficacy with behaviour management); and, "In your current work situation, to what extent can you help your students value learning?" (efficacy with engagement).

Attitudes toward technology

Attitudes toward technology were measured using 6 items from a sub-scale developed by Edison and Geissler (2003), supplemented with an additional statement to reflect the current change to technology-based teaching: "I am comfortable with my abilities with the technology I need to use in my current teaching." Participants responded using a 6-point Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree). An example statement is, "I know how to deal with technological malfunctions or problems."

Attitudes toward change

The Teacher Attitudes Towards Change Scale (TATC Scale) (Kin & Kareem, 2017) was used. The 9-item scale measures three main constructs, including cognitive, affective, and behavioural responses to change using a 6-point Likert scale. Possible responses were 1 (strongly disagree), 2 (disagree), 3 (moderately disagree), 4 (moderately agree), 5 (agree), and 6 (strongly agree). Example statements are, "I often suggest changes for my school" (cognitive response to change), "Change frustrates me" (affective response to change), "In general, change often helps me perform better" (behavioural response to change). These 4 scales represent the quadrants created when the two continua (active-passive and positive-negative) intersect: *resistance* (negative and active, with scores between 1 and 2.24), *indifference* (negative and passive, with scores between 2.25 and 3.49), *acceptance* (positive and passive, with scores between 3.5 and 4.74) and *embracing* (positive and active, with scores between 4.75 and 6).

Job demands and resources

As part of the larger study, teachers were given the opportunity to indicate job demands and resources that are implicated in the closure of schools and the pivot to online teaching. They were provided with a list of five anticipated demands and 15 resources and asked to indicate the degree to which they perceived each as contributing to their stress or support, respectively. These findings have been reported elsewhere (Sokal, Eblie Trudel, & Babb, 2020a). Both resources and demands were measured on a Likert scale ranging from 1 (not at all) to 6 (a great deal). Of particular interest in the current study was the support of administrators. This variable was measured with the following statement: How much does this factor contribute to the support of your teaching during the COVID-19 pandemic: Support from administrators.

Dependant variables

In this study, we investigated a total of 12 dependant or response variables. Three of these variables were constructed from the TATC scale of Kin and Kareem (2017): cognitive attitudes towards change, affective attitudes towards change, and behavioural attitudes towards change. One variable, administrative support, pertains to job resources. Three variables pertain to teaching efficacy and were measured using the Teacher Sense of Self-efficacy scale of Tschannen-Moran and Hoy (2001): efficacy with strategies, efficacy with behaviour, and efficacy with engagement. The variable called attitudes towards technology was determined using a sub-scale developed by Edison and Geisler (2003). From the global stress and coping statements validated by Eddy et al. (2019), we constructed the dependant variable resilience. Three additional variables measuring teacher stress were obtained using the Maslach Burnout Inventory for Educators (MBI) of Maslach and Jackson (1981).

Participants

In total, 1686 people completed the surveys in April and June. People who indicated they were not teachers (e.g. administrators, clini-

Table 2

Correlations between variables in April survey.

Variables	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Resilience										
Sig. (2-tailed)	–									
N										
2. MBI: exhaustion	−0.797**									
Sig. (2-tailed)	.000									
N	1272									
3. MBI: cynicism	−0.300**	.411**								
Sig. (2-tailed)	.000	.000								
N	1272	1277								
4. MBI: accomplishment	.236**	−0.192**	−0.315**							
Sig. (2-tailed)	.000	.000	.000							
N	1272	1277	1277							
5. Efficacy: strategies	.169**	−0.198**	−0.252**	.553**						
Sig. (2-tailed)	.000	.000	.000	.000						
N	1269	1274	1274	1274						
6. Efficacy: behaviour	.117**	−0.123**	−0.198**	.380**	.436**					
Sig. (2-tailed)	.000	.000	.000	.000	.000					
N	1249	1254	1254	1254	1254					
7. Efficacy: engagement	.131**	−0.135**	−0.315**	.606**	.620**	.476**				
Sig. (2-tailed)	000	.000	.000	.000	.000	.000				
N	1269	1274	1274	1274	1272	1252	1274			
8. Attitudes to technology	.251**	−0.247**	−0.050	.165**	.243**	.174**	.179**			
Sig. (2-tailed)	.000	.000	.072	.000	.000	.000	.000			
N	1271	1276	1276	1276	1273	1253	1274	1276		
9. Change attitudes: cognitive	.276**	−0.287**	−0.202**	.329**	.280**	.216**	.307**	.316**		
Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000		
N	1267	1272	1272	1272	1269	1250	1270	1272	1272	
10. Change attitudes: affect	.216**	−0.260**	−0.221**	.221**	.174**	.151**	.171**	.261**	.546**	
Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	
N	1268	1273	1273	1273	1270	1250	1271	1273	1272	1273
11. Change attitudes: behaviour	.102**	−0.090**	−0.070*	.200**	.132**	.116**	.119**	.245**	.495**	.543**
Sig. (2-tailed)	.000	.001	.013	.000	.000	.000	.000	.000	.000	.000
N	1267	1272	1272	1272	1269	1250	1270	1272	1271	1272

Note: Higher exhaustion and cynicism scores indicate higher burnout, whereas higher accomplishment scores indicate higher accomplishment and lower burnout.

* Correlation is significant at the .05 level (2-tailed) **Correlation is significant at the 0.01 level (2-tailed).

cians, etc.) were excluded from the analyses, resulting in 1626 participants—1278 in April and 348 in June (Table 1).

Findings

Q1 Are teachers' attitudes toward change, teaching efficacy, and attitudes toward technology correlated with one another and with teacher resilience and burnout during the initial stages of a pandemic?

In order to address the first research question, we conducted two-tailed tests of Pearson correlation coefficients using the data collected in April, at the beginning of the pandemic (see Table 2). All findings demonstrated significant relationships in the anticipated directions. Teachers' positive attitudes toward change (cognitive, affective, and behavioural), positive perceptions of principal support, teaching efficacy, and positive attitudes towards technology correlated positively with one another and with teacher resilience. These variables were correlated negatively with burnout during the initial stages of a pandemic. Please note that higher levels of exhaustion and cynicism indicate higher levels of burnout, whereas higher levels of accomplishment indicate lower levels of burnout.

Q2 Do teachers' attitudes toward change, perceptions of principal support, teaching efficacy, and attitudes toward technology, teacher resilience and burnout change over time during the initial stages of a pandemic? In order to address the second research question, we conducted a series of one-factor ANOVA tests with time of survey (April and June) as the independent variable and teachers' attitudes toward change, perceptions of principal support, teaching efficacy, and attitudes toward technology, teacher resilience and burnout as the dependant variables. For each of the 12 dependant variables, an

analysis of variance (ANOVA) was conducted using a one-factor fixed effects model (Zar, 2010). ANOVA was selected for the analytical approach, because it is appropriate when we wish "to determine whether there are any statistically significant differences between the means of two or more independent (unrelated) groups" (Laerd Statistics, n.d.).

A power analysis was conducted for estimating a group 1 mean of 3, and group 2 mean of 4, alpha of 0.05, Beta 0.2, and power set at 0.8, under the conditions of continuous endpoints and 2 independent groups (Cohen, 1988). It indicated that a group size of 16 data points per cell per analysis was required. Therefore, the power analysis indicated our sample sizes at both survey times were sufficient.

We begin with the April data set (see Table 3) and its interpretation of the means based on the coding for the measures used in the study. Mean scores for attitudes toward change in April indicated that teachers were in the acceptance stage of change (positive and passive) for cognitive, affective, and behavioural responses to change. The mean score for support from administrator, 4.45 of a possible 6, indicated perceptions of good support from administrators. Sub-scales of teacher efficacy indicated that most teachers reported low to moderate efficacy for strategies (4.40/9), behaviour (3.25/9), and engagement (4.22/9). Attitudes toward technology were moderate (4.04/6). The coping-minus-stress result (called "resilience") indicated that teachers in April perceived a 9.68% deficit in coping as compared to stress. Likewise, in terms of burnout scores, we found that teachers scored their mean exhaustion at 3.50 out of a possible 6, with higher scores indicating higher exhaustion and burnout. This score indicated teachers were feeling exhausted a few times per month to once per week. Mean cynicism in April was 1.46 out of a possible 6, with higher score indicates higher cynicism and burnout. This score indicated teachers were feeling cynical once a month or less often. Accomplishment in April was scored at 3.42 out of a possible 6,

Table 3

ANOVA comparing April and June values of dependant variables.

Variable	April mean	June mean	df	F	Sig.	n²
Change attitude: cognitive	3.5597	3.3558	1	11.630	.001**	.001
Change attitude: affective	3.7396	3.5900	1	6.066	.014*	.003
Change attitude: behavioural	3.7093	3.6649	1	.789	.375	
Administrative support	4.45	4.43	1	.022	.882	
Efficacy: strategies	4.4036	4.4864	1	.600	.439	
Efficacy: behaviour	3.2458	3.9312	1	28.658	.000**	.017
Efficacy: engagement	4.2155	4.0251	1	3.694	.055	
Attitudes toward technology	4.0406	3.9941	1	.395	.530	
Resilience	−0.9686	−0.6839	1	1.592	.207	
MBI: exhaustion	3.4978	4.5670	1	158.046	.000**	.089
MBI: cynicism	1.4598	2.7243	1	324.805	.000**	.147
MBI: accomplishment	3.4248	4.5812	1	287.198	.000**	.150

Note:

** indicates significance at the 0.01 level.

* indicates significance at the 0.05 level.

with higher scores indicates higher accomplishment and *lower* burnout. This score indicated teachers were feeling a sense of accomplishment a few times per month to once per week.

The ANOVAs revealed that mean scores for several variables changed significantly from April to June. In terms of attitudes toward change, behavioural responses to change were not significantly different between April and June, but both cognitive and affective responses to change were. Cognitive responses to change were significantly lower in June, and the decrease in scores resulted in participants' means moving from the category of acceptance (positive/passive) to the category of indifference (negative/passive). Likewise, affective responses to change were significantly lower in June, but the decrease in mean score was not enough to move the mean from the acceptance (positive/passive) category in which they began in April. There were no significant changes in participants' perceptions of administrative support, efficacy for strategies, or efficacy for engagement, however efficacy for behaviour management increased significantly from April to June. In terms of resilience, there were no significant differences in the coping deficits between April and June, with the mean demonstrating that teachers in June perceived a 6.8% deficit of coping as compared to stress. In terms of burnout, teachers were significantly more exhausted in June than in April, with the June mean score indicating teachers were feeling exhausted once per week to a few times per week. The mean score for cynicism in June was also significantly higher than it was in April, with the June mean score indicating teachers were feeling cynical once per month to a few times per month. Finally, the June mean score for accomplishment was significantly higher in June than it was in April, with June scores indicating that teachers were feeling a sense of accomplishment once per week to a few times per week.

Discussion

The analyses regarding factors affecting teachers' stress and resilience during a pandemic revealed a wide range of findings– some expected based on prior research and some unexpected. First, the correlational analyses revealed that the relationships demonstrated in prior, non-pandemic conditions were likewise demonstrated during the pandemic. As expected, teachers' resilience and level of burnout were significantly correlated with their attitudes towards technology, attitudes toward change, and their efficacy.

Second, the ANOVAs revealed that as time went by, changes were demonstrated in the mean scores for some of these variables. While both affective and cognitive attitudes toward change became less favourable, teachers' behavioural attitudes toward change did not change significantly. It is possible that the challenges of engaging students through online learning, worry about students' well-being, as well as the inequities in access reported in our earlier publications (Sokal, Eblie Trudel, &

Babb, 2020b) led to more negative thoughts and feelings about the change to online teaching. That is, teachers became less convinced about the merits of remote teaching as an alternative to face-to-face instruction and their feeling and thoughts reflected this.

There were some interesting and unexpected changes related to efficacy and burnout. Prior research has shown that burnout follows the progression from increased exhaustion to increased cynicism to *decreased* accomplishment (Alarcon, 2011; Taris, Leisink & Schaufeli, 2017). While teachers in our sample demonstrated increased exhaustion and cynicism between the April and June data collection, they also demonstrated *increased* accomplishment. It is possible that this unexpected findings is the result of the concurrent finding that from April to June teachers also demonstrated higher levels of efficacy for managing behaviour while teaching online. Management of student behaviour within physical proximity is very different from management of student behaviour in an online environment. Teachers may have initially missed the affordances of managing behaviour within physical proximity (Berger's, 2020 *endowment*), and may have experienced *uncertainty* (Berger, 2020) about the ways to manage behaviours while on line due to the *distance* (Berger, 2020) between their typical practices and those necessary to be effective online. However, it is likely that the students who were attending online classes were responding to teacher direction in more positive ways by June, resulting in teachers reporting more efficacy in this dimension of teaching in the later data set. This is a significant and meaningful improvement, as teachers' perceptions about the ability to manage student behaviour are important indicators of teaching effectiveness (Brouwers & Tomic, 2000) and predictive of teachers' burnout (Aloe, Amo & Shanahan, 2014). In fact, in a prior longitudinal study conducted by Brouwers and Tomic in non-pandemic conditions, structural equation modelling indicated that exhausted teachers had poorer efficacy for classroom management, which led to both depersonalization and loss of accomplishment—the later stages of burnout. These authors interpreted their findings as a function of exhaustion promoting poorer quality teaching, which led to self- perceptions of poor classroom management and then more progressed burnout in teachers. They highlighted the process of exhaustion as a "long-term stress response" (p. 249), which suggests that the progression toward teacher burnout could be halted or even reversed if exhaustion (defined here as perceptions of having not enough resources to meet demand) were mitigated.

Implications

The global pandemic has changed schooling and teaching in ways never experienced in our lifetime. Teachers were required to modify their pedagogy very quickly within a time of uncertainty for both themselves and their students. During the time when our data were collected,

teachers in Canada were adjusting the what many believed would be a short-term change, which has not proven to be the reality of COVID-19. Our findings showed that over the course of the last three months of the 2019–2020 school year, teachers became more efficacious for managing online behaviour of students and demonstrated a greater sense of accomplishment in their teaching as time went on. While these findings are encouraging, they are tempered by the finding that over this same time period, teacher maintained a perception that their stress exceeded their coping capacity, and likewise demonstrated progression on the pathway to burnout. Despite progressively more negative thoughts and feelings about the loss of face-to face teaching, teachers maintained consistent behavioural attitudes in that they continued to support online teaching to the best of their ability. However, given that positive beliefs and attitudes– which are essential to new behaviours being maintained (Bouckenooghe, 2009) – showed significant decreases over the course of these three months, it is theoretically predicted that declines in sustained behaviour will follow. It will be important to address teachers' thoughts and feelings about remote teaching as well as their exhaustion if we are to mitigate their continued progression toward burnout. This goal can be accomplished by careful examination and amelioration of the balance between job demands and resources that define our new reality within the context of COVID-19 teaching responses, particularly as subsequent waves of this pandemic occur.

Limitations

All research has limitations, and our research is no exception to this observation. First, the use of the snowball sampling technique heightens risk of sampling bias. Specifically, the teachers who were either very positive or very negative could have been more likely to take part. Likewise, teachers who were very overwhelmed may not have wished to spend another 15 min filling out a survey, therefore limiting their representation in the sample. Second, the participation rate decreased from April to June. It is possible that this was an artefact of timing in two ways: (1) our survey was one of the first launched in the pandemic and multiple provincial and national surveys were launched between our data collection periods, and may have contributed to participant fatigue and morbidity; (2) our second survey was collected during the last weeks of school when some teachers were very busy and less likely to take part. Given these differences between the two cohorts, it is important to recognize that the findings might have been different if the exact same teachers had taken part in both survey administrations.

No withstanding these limitations, the current research suggests that although teachers are 'finding their feet' in terms of teaching during a pandemic—as indicated by greater accomplishment and efficacy for managing student behaviour in online environments—teachers are burning out. Initial losses in their positive affective and cognitive attitudes toward change within the current context of sustained exhaustion will likely be followed by negative behavioural attitudes toward change if we are not able to decrease demands and increase resources to the degree where teachers perceive they have a positive balance between stress and coping. As the frontline workers in our educational system, to ignore this warning from teachers is to welcome a threat to the very purposes of schooling. As stated by Dorcet and colleagues (Dorcet et al., 2020) in their recommendations to UNESCO at the onset of the 2020 pandemic, "If we don't address teacher welfare, we are going to have more collateral problems than answers to this crisis."

Declaration of Competing Interest

None.

Acknowledgements

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