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Parenting during COVID-19: Stress of Fathers with and without Children with Special Needs in Singapore

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ABSTRACT

The COVID-19 pandemic has resulted in greater parental stress for parents worldwide. In this study, we focused on examining the parental stress of fathers in Singapore, during COVID-19. Comparing the parental stress of fathers with neurotypical children and fathers with children with special needs in Singapore, this study examined financial stress, work-family balance and resilience and their influence on fathers' parental stress as measured by Parental Stress Scale, APR Financial Stress Scale, Perceived Work-Family Balance Survey and Brief Resilience Scale respectively. A total of 171 fathers participated in the survey (42 fathers with children with special needs aged 0 to 18 years old, and 129 fathers with neurotypical children aged 0 to 18 years old). Results revealed that fathers with children with special needs tend to experience greater parental stress than fathers with neurotypical children. Parental stress also has statistically significant correlations with financial stress, perceived work-family balance and resilience. Financial stress, perceived work-family balance and resilience are statistically significant predictors of parental stress for fathers with neurotypical children, while only perceived work-family balance is a statistically significant predictor of parental stress for fathers with children with special needs. Differences exist between the parental stress of fathers with infants/young children (0-6 years old), school-aged children (7-12 years old) and teens with special needs (13-18 years old). Furthermore, the researchers shared these findings with a group of professional practitioners to seek their views and reported several practical recommendations for consideration.

Keywords: fathers, children with special needs, neurotypical children, parental stress, financial stress, work-family balance, resilience

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INTRODUCTION

SARS-COV-2 (also known as COVID-19) has resulted in a pandemic and has been termed as the deadliest of the 21st century viruses (The Straits Times, 2020). According to the World Health Organization (2020), the COVID-19 pandemic has impacted mental well-being and stress globally, and the pandemic has been declared as a Public Health Emergency of International Concern. A study by the Institute of Mental Health in Singapore, reported that 13% of over 1000 participants reported symptoms of anxiety and depression during COVID-19 (Goh, 2021b). Overall, the pandemic has greatly impacted mental well-being.

The COVID-19 pandemic has also caused greater parental stress for parents with neurotypical children (Chung et al., 2020a) and parents with children with special needs (Dhiman et al., 2020). Parental Stress is defined as the psychological reaction that occurs when parents encounter parenting-related challenges yet do not possess the resources (i.e., energy and time) to face these challenges (Holly et al., 2019). Children with special needs refer to children who have challenges which are more severe compared to a neurotypical child. The four main types of children with special needs include Physical (i.e., multiple sclerosis), Developmental (i.e., autism and down syndrome), Behavioral/ Emotional (i.e., attention deficit hyperactive disorder) and Sensory Impaired (i.e., visually impaired) [Sowmya & Preethi, 2019].

International studies examined both parents with children with special needs and found increased parental stress during COVID-19 (Chen et al., 2020; Ren et al., 2020). Prior to the pandemic, most research focused on studying mothers' stress and neglected that of fathers' (Athari et al., 2013; Sowmya & Preethi, 2019). Yet, it should be noted that these days, traditional gender roles where fathers tend to be the sole breadwinner and mothers tend to be the homemaker are evolving in our dual-income society (Ho, 2021) and may be increasingly irrelevant as we move towards equal roles in parenting.

Parenting is stressful and arguably a culturally sensitive experience. For instance, there are unique stressors associated with living in Singapore (i.e., emphasis on academic achievement) compared to living in other countries (The Straits Times, 2013). Government-imposed measures and restrictions during the pandemic such as home-based learning for students (Ong, 2021) and work-from home arrangements (Mohan, 2021) are unique to our local context and may potentially affect the level and nature of parental stress during this period.

Furthermore, the studies conducted in Singapore examining the parental stress of both parents with neurotypical children during COVID-19 (Chung et al., 2020a; Chung et al., 2020b) may not be applicable to parenting children with special needs due to the differences in challenges. For example, children with special needs tend to also have co-occurring medical/psychological conditions, such as epilepsy and bipolar disorder, and

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other behavioral challenges such as 'meltdowns' and tantrums (Morozov, 2018; Munir, 2016; Oldfield, 2012). In view of the differences in the challenges and experiences faced by parents, it is worthwhile to examine parent stress among these groups of parents.

The present study will be examining financial stress, work-family balance and resilience and its influence on fathers' parental stress comparing between fathers with children with special needs and father with neurotypical children.

Financial Stress

Fathers have greater parental stress when they experience financial difficulty (Athari et al., 2013; Ilias et al., 2018; Stack & Meredith, 2018). As explained by the Identity Theory of Stress, individuals identify more strongly with roles that are associated with a socially acceptable identity (Burke, 1991). Due to traditional Asian societal expectations, fathers tend to view themselves as the 'main financial provider' of the family, while mothers tend to view themselves as the 'home caregiver' (Yeng, 2010). Hence, when fathers experience financial difficulty, they tend to also have greater parental stress because they are not able to meet this role of 'main financial provider'.

Research has shown that it is costly to raise a child with special needs (Anderson et al., 2007). According to Shahat and Greco (2021), the annual cost of raising a child with special needs (till age 18) worldwide is approximately $450 to $69,500. Indeed, studies show that fathers of children with autism spectrum disorder tend to be more stressed about financial difficulty and have greater parental stress (Athari et al., 2013; Ilias et al., 2018). As experts highlight that the pandemic would have enduring after-effects on Singapore's economy (Khanna, 2021), this may suggest that financial stress may be a long-standing issue for Singaporeans and therefore worthwhile to examine the role of financial stress in parental stress among fathers with neurotypical children and fathers with children with special needs.

Work-Family Balance

Parents with neurotypical children, who report poor work-family balance may also have greater parental stress (Chung et al., 2020a). Work-family balance refers to an individual's ability to manage their employment problems with their family responsibilities (i.e., childcare arrangements) (Ten Brummelhuis & Bakker, 2012). According to the Work-Home Resources Model, work-family balance is a result of greater work-home enrichment and lesser work-home interference (Ten Brummelhuis & Bakker, 2012). The former occurs when contextual resources (i.e., social support from spouse or employer) increases one's personal resource (i.e., cognitive energy) to facilitate coping in the work/home domains. While the latter occurs when contextual demands deplete one's personal resource and affects how an individual copes in the work/home domains. Poor work-family balance may then lead to mental health issues such as parental stress and depression (Ten Brummelhuis & Bakker, 2012).

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An online survey was conducted to collect data from 258 parents with neurotypical children in Singapore and results revealed that fathers were more likely than mothers to have higher levels of spousal/employer support and work-family balance, and hence lesser parental stress (Chung et al., 2020a). However, these findings may not apply to fathers of children with special needs because they tend to have more behavioural problems (Handwerk & Marshall 1998). For example, children with autism tend to be distressed over environmental changes (Hendricks & Palko, n.d.), resulting in frequent tantrums. Indeed, a study on a sample of 1584 parents with a child with autism, showed that 53.7% agreed that their child has aggressive behaviors (Mazurek et al., 2013). Another study also demonstrated that children with learning disabilities tend to also be more aggressive than neurotypical children (Handwerk & Marshall 1998).

Resilience

Resilience typically represents personal qualities that enable an individual to thrive in the face of adversity (Liu et al., 2018). Research shows that resilience is associated with stress. For instance, a highly activated medial prefrontal cortex (mPFC) tend to help manage stress pathways better (Liu et al., 2018).

A quantitative study was conducted by Vela and Manuel (2020) to examine resilience, stress and satisfaction of parents with neurotypical children (n=121) and parents with children with special needs (n=178). Results from regression analyses demonstrate that resilience is able to predict familial stress in a statistically significant way (Vela & Manuel, 2020). However, these studies were conducted prior to COVID-19 and may not be as relevant now. The government measures due to COVID-19 (as mentioned earlier) [Mohan, 2021; Ong, 2021] and the health concerns due to COVID-19 has led to social isolation and resulted in stress and frustration (Cheon, n.d.). Does resilience then play a role in helping fathers with neurotypical children and fathers with children with special needs to mediate parental stress amidst the challenges during COVID-19?

Parental Stress and Age group of Children with Special Needs

According to the Enabling Guide (n.d.), there are three main age-groups for children with special needs in Singapore based on their different life stages. They are 0-6 years old (infancy to pre-primary), 7-12 years old (primary) and 13-18 years old (Secondary to tertiary).

Firstly, children aged between 0-6 years old can be categorized as infants/young children, who will be primarily receiving early intervention services and/or Child-care (SG Enable, n.d.).

Secondly, children aged between 7-12 years old can be categorized as school-aged children, who will be primarily receiving primary school education in either mainstream

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or special education schools (Enabling Guide, n.d.).

Lastly, children aged between 13-18 years old can be categorized as teens, who will primarily be receiving secondary to tertiary education in mainstream or special education schools (Enabling Guide, n.d.).

Do fathers of children with special needs then have different concerns due to the different developmental and psychosocial needs of children in the different age groups?

According to Rimmerman and Duvdevani (1996), when children with intellectual disabilities start schooling at 7 years old, parents may start to be more aware of the achievement differences between their child and other students. This then leads to greater parental stress. As parents may have different concerns for their children at different life stages, it is meaningful to fathers' stress in parenting a child with special needs between the different age-groups (0 to 6 years old, 7-12 years old and 13-18 years old) during COVID-19.

RESEARCH QUESTIONS

1. Do fathers with children with special needs experience more parenting stress than fathers with neurotypical children during the pandemic?

2a. What is the relationship between parental stress and the three variables (financial stress, perceived work-family balance and resilience) for fathers with neurotypical children during COVID-19?

2b. Can parental stress of fathers with neurotypical children be predicted by their levels of financial stress, perceived work-family balance and resilience during COVID-19?

3a. What is the relationship between parental stress and the three variables (financial stress, perceived work-family balance and resilience) for fathers with children with special needs during COVID-19?

3b. Can parental stress of fathers with children with special needs be predicted by their levels of financial stress, perceived work-family balance and resilience during COVID-19?

4. Do differences exist between the parental stress of fathers with infants/ young children, school-aged children and teens with special needs during COVID-19?

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Table 1. Parental Stress Scale, APR Financial Stress Scale, Perceived Work-Family Balance survey and Brief Resilience Scale

Name of measurement	Description	Psychometric properties
Parental Stress Scale	18 items Low score = low level of parental stress high score = high level of parental stress	Good reliability, construct validity and convergent validity in a sample of 1096 parents from Norway (Nærde & Sommer Hukkelberg, 2020).
APR Financial Stress Scale	Affective dimension consists of 8 items measuring 3 subcategories (Depression, Anxiety and emotional exhaustion due to financial stress). Relational dimension consists of 8 items measuring work-related and non-work-related interpersonal behaviour due to financial stress. Physiological dimension consists of 8 items measuring six common systemic responses due to financial stress: respiratory, cardiovascular, gastrointestinal, nervous system, musculoskeletal, and endocrine system responses. Low score = low level of financial stress. High score = high level of financial stress	High internal consistency reliability between dimensions (Cronbach Alpha value of .95, .91 and .94 for the affective, relational and physiological dimensions respectively) [Heo et al., 2020].
Perceived Work-Family Balance survey	3 items Low score = high level of perceived work-family balance high score = low level of perceived work-family balance	Previously used to assess work-life balance and the well-being of working parents with a chronically ill or disabled child in New Jersey (Jang, 2008).
Brief Resilience Scale	6 items Low score = low level of resilience high score = high level of resilience	High internal consistency ($\alpha = .71$) amongst a sample of 511 Chinese (Fung, 2020).

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METHODS

Participants

Participants included 171 fathers. They were recruited from organizations such as School of the Arts, Rosyth School, New Life Community Services, Asian Women's Welfare Association (AWWA), Early Childhood Development Agency and Dyslexia Association of Singapore.

Research measures

4 measures were selected to address the research objectives, with their description and psychometric properties outlined in Table 1.

Measurements

The items on the scales were scored on a a 5-point likert scale ranging from '1' to '5' ('1 = strongly disagree', '2 = disagree', '3 = neutral', '4 = agree', '5 = strongly agree').

RESULTS

1. Do fathers with children with special needs experience more parenting stress than fathers with neurotypical children during the pandemic?

Due to the huge difference in sample size between the fathers with children with special needs (n = 42) and the fathers with neurotypical children (n = 129), we matched the participants according to the 'number of children' each participant has (case-matching). The following analysis was based on 42 fathers with children with special needs and 42 fathers with neurotypical children, both groups reported similar number of children.

Table 2. Results of independent samples t-test and Descriptive Statistics for Parental Stress Scores (Fathers with neurotypical children and Fathers with children with special needs)

	Fathers with Neurotypical Children			**Fathers with Children with Special Needs**					
	M	***SD***	***n***	***M***	***SD***	***n***	***t*(82)**	***p***	**Cohen's *d***
Parental Stress Scores	40.12	8.376	42	45.10	9.378	42	-2.565	.012	.56

Note. M = Mean, SD = Standard Deviation, n = total number of participants in the sample

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Fathers with children with special needs experience greater parental stress (M = 45.10, SD = 9.378) than fathers with neurotypical children during COVID-19 (M = 40.12, SD = 8.376), t (82) = -2.565, p = .012. Cohen's d was also used to report the standardized mean difference of an effect (Cohen, 1988). Where, Cohen's d = .2 refers to small effect sizes, Cohen's d = .5 refers to medium effect sizes and Cohen's $d \geq .8$ refers to large effect sizes (Cohen, 1988). The effect size for Hypothesis 1 is Cohen's d = .56 (medium)

2a. What is the relationship between parental stress and the three variables (financial stress, perceived work-family balance and resilience) for fathers with neurotypical children during COVID-19?

Financial stress, perceived work-family balance, and resilience have statistically significant correlations with parental stress. (Table 3)

Table 3. Descriptive Statistics and Correlations Coefficients for Financial Stress, Perceived Work-Family Balance and Resilience with Parental Stress for Fathers with Neurotypical Children (n = 129)

Variable	*n*	*M*	*SD*	1	2	3	4
1. Parental Stress	129	40.22	9.166	-			
2. Financial Stress	129	48.93	20.747	.504*	-		
3. Perceived Work-Family Balance	129	10.08	2.879	-.418*	-.500*	-	
4. Resilience	129	22.27	4.040	-.370*	-.447*	.265**	-

Note. M = Mean, SD = Standard Deviation, n = total number of participants in the sample
**p = .000. **p = .001.*

2b. Can parental stress of fathers with neurotypical children be predicted by their levels of financial stress, perceived work-family balance and resilience during COVID-19?

Financial stress is the strongest predictor of Parental stress compared to the other two variables. The coefficient of determination indicates that the total variance that is explained by the independent variables is 31.4%. (Table 4)

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Table 4. Regression Coefficients for Financial Stress, Perceived Work-Family Balance and Resilience in predicting Parental Stress for Fathers with Neurotypical Children (*n* = 129)

	Unstandardized Coefficients		Standardized Coefficients		
	B	**SE**	**Beta**	***t***	***p***
(constant)	48.609	6.281		7.739	.000
Financial Stress	.143	.041	.323	3.495	.001
Perceived Work-Family Balance	-.672	.273	-.211	-2.465	.015
Resilience	-.386	.188	-.170	-2.051	.042

Note. Dependent Variable: Parental Stress.
R^2= .314

Table 5. Analysis of Variance (ANOVA) for Multiple Linear Regression

	Sum of Squares	***df***	**Mean Square**	***F***	***p***
Regression	3376.313	3	1125.438	19.068	.000
Residual	7377.609	125	59.021		
Total	10753.922	128			

Note. df = Degree of Freedom.
Dependent Variable: Parental Stress
Predictors: (Constant), Financial Stress, Perceived Work-Family Balance and Resilience

The model is a statistically significant predictor of the dependent variable, $F(3, 125) = 19.068$, $p = .000$. (Table 5)

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3a. What is the relationship between parental stress and the three variables (financial stress, perceived work-family balance and resilience) for fathers with children with special needs during COVID-19?

Financial stress, perceived work-family balance, and resilience have statistically significant correlations with parental stress for fathers with children with special needs during COVID-19. (Table 6)

Table 6. Descriptive Statistics and Correlations Coefficients for Financial Stress, Perceived Work-Family Balance and Resilience with Parental Stress for Fathers with Children with Special Needs (n = 42)

Variable	*n*	*M*	*SD*	1	2	3	4
1. Parental Stress	42	45.10	9.378	-			
2. Financial Stress	42	56.50	24.261	.607*	-		
3. Perceived Work-Family Balance	42	8.81	3.373	-.548*	-.572*	-	
4. Resilience	42	20.74	3.306	-.485**	-.519*	.260***	-

Note. n = total number of participants in the sample, M = Mean, SD = Standard Deviation.
**p = .000. **p = .001. ***p = .048*

3b. Can parental stress of fathers with children with special needs be predicted by their levels of financial stress, perceived work-family balance and resilience during COVID-19?

Perceived work-family balance is the strongest predictor of parental stress compared to the other 2 variables. The coefficient of determination R^2 indicates that the total variance that is explained by the independent variables is 47.3%. (Table 7)

The model is a statistically significant predictor of the dependent variable, $F(3, 38) = 11.361$, $p = .000$. (Table 8)

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Table 7. Regression Coefficients for Financial Stress, Perceived Work-Family Balance and Resilience in predicting Parental Stress for Fathers with Children with Special Needs (n = 42)

	Unstandardized Coefficients		**Standardized Coefficients**		
	B	**SE**	**Beta**	***t***	***p***
(constant)	60.744	11.629		5.223	.000
Financial Stress	.116	.063	.300	1.848	.072
Perceived Work-Family Balance	-.866	.400	-.311	-2.165	.037
Resilience	-.703	.391	-.248	-1.796	.080

Note. Dependent Variable: Parental Stress.
R^2 = *.473*

Table 8
Analysis of Variance (ANOVA) for Multiple Linear Regression

	Sum of Squares	***df***	**Mean Square**	***F***	***p***
Regression	1704.865	3	568.288	11.361	.000
Residual	1900.754	38	50.020		
Total	3605.619	41			

Dependent Variable: Parental Stress
Predictors: (Constant), Financial Stress, Perceived Work-Family Balance and Resilience

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4. Do differences exist between the parental stress of fathers with infants/young children, school-aged children and teens with special needs during COVID-19?

Statistically significant differences exist between the parental stress of fathers with infants/young children, school-aged children and teens with special needs during COVID-19, $F(2, 39) = 3.775$, $p = .032$. The Eta Square () measures the proportion of the variation in the dependent variable that can be explained by the different groups defined by independent variable (Cohen,1988). Where, = .01 refers to small effect sizes, = .06 refers to medium effect sizes and = .14 refers to large effect sizes. The for the ANOVA in Research Question 4 is .16 or 16% (large effect size).

Table 9. Analysis of Variance (ANOVA) for Fathers with Fathers with Infant/Young Children with Special Needs (n =12), Fathers with School-aged Children with Special Needs (n = 16) and Fathers with Teens with Special Needs (n = 14)

				Fathers with Infant/Young Children with Special Needs		Fathers with School-aged Children with Special Needs		Fathers with Teens with Special Needs	
Dependent Variable	***F*(2, 39)**	***P***	η^2	***M***	***SD***	***M***	***SD***	***M***	***SD***
Parental Stress	3.775	.032	.16	50.92	9.895	43.44	7.763	42.00	8.944

A Post-hoc test, known as Tukey's Honestly Significant Difference test (HSD) [Newcastle University, n.d.], was conducted (Table 10). A statistically significant difference ($p = .036$) can be seen between the means of parental stress for fathers with infants/young children with special needs ($M = 50.92$, $SD = 9.895$) and the means of parental stress for fathers with teens with special needs ($M = 42.00$, $SD = 8.944$).

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Table 10. Tukey's HSD for Fathers with Fathers with Infant/Young Children with Special Needs (n =12), Fathers with School-aged Children with Special Needs (n = 16) and Fathers with Teens with Special Needs (n = 14)

(I) Group	(J) Group	Mean Difference (I-J)	SE	*p*
Fathers with Infant/Young Children with Special Needs	Fathers with School-aged Children with Special Needs	7.479	3.361	.079
Fathers with Infant/Young Children with Special Needs	Fathers with Teens with Special Needs	8.917	3.462	.036
Fathers with School-aged Children with Special Needs	Fathers with Teens with Special Needs	1.438	3.221	.896

Note. SE = Standard Error.

DISCUSSION

Do fathers with children with special needs experience more parenting stress than fathers with neurotypical children during the pandemic?

Fathers with children with special needs experience more parental stress than fathers with neurotypical children during COVID-19 [t (82) = -2.565, p = .012], with medium effect sizes (Cohen's d = 0.56).

The current findings are aligned with findings from past studies where both parents with children with special needs were found to have increased parental stress during COVID-19 (Chen et al., 2020; Ren et al., 2020). Hence, more support (workshop/resources/ programmes) should be catered for fathers with children with special needs to help alleviate parental stress.

2a and 3a. What is the relationship between parental stress and the three variables (financial stress, perceived work-family balance and resilience) for fathers with neurotypical children/children with special needs during COVID-19?

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Financial Stress and Parental Stress. Our results show that fathers with children with special needs have a stronger correlation coefficient (r = .607) for the relationship between financial stress and parental stress, compared to fathers with neurotypical children (r = .504).

Fathers with children with special needs may be worried about their finances due to the sudden poor economy because of COVID-19 [Tang, 2020], and the higher costs of raising a child with special needs compared to raising a neurotypical child (Shahat & Greco, 2021). They may, therefore, also have greater parental stress as they perceived that they are not able to fulfil their role as 'main financial provider' during COVID-19.

Interestingly, the correlation coefficient for the relationship between financial stress and parental stress for fathers with children with special needs (r = .607) is also the strongest. This suggests that greater financial support can be provided for fathers with children with special needs during COVID-19

In Singapore, there are insurance policies for children with autism and down's syndrome that provide a payout for the insured person (child) in the event of accidental death or permanent disability of the policy holder (parent), and cover accident expenses for the child (Goh, 2019). Despite so, hospitalization and critical illness expenses (which may be the bulk of the expenses) will not be covered. This is because insurance companies may not be keen to insure children with special needs due to their higher risk for medical conditions and self-inflicting behaviors that may require hospitalization (Oldfield, 2012). As such, community partners/government agencies may consider partnering with insurance companies to ensure adequate insurance coverage (hospitalization and critical illness) for children with special needs.

Perceived Work-Family Balance and Parental Stress. Our results show that fathers with children with special needs have a stronger correlation coefficient (r = -.548) for the relationship between perceived work-family balance and parental stress, compared to fathers with neurotypical children (r = -.418).

This could be because the changes due to COVID-19 may have resulted in children with special needs exhibiting more behavioral problems during COVID-19 (Cerebral Palsy Alliance Singapore, n.d). As stated earlier, children with autism tend to be distressed over environmental changes (Hendricks & Palko, n.d.). They may therefore, face difficulty in adapting to these new safe-distancing measures, which may result in poor emotional regulation and increased behavioral problems/self-inflicted injuries (Cerebral Palsy Alliance Singapore, n.d). For example, children with autism with sensory issues may be more resistant to wearing masks due to the tactile discomfort and hence, throw a tantrum. Fathers may then find it stressful to manage their child's behaviors while working from home. According to the Work-Home Resources Model (Ten Brummelhuis & Bakker, 2012), this may then increase work-home interference and result in poorer work-

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family balance and greater parental stress.

Resilience and Parental Stress. Our results show that fathers with children with special needs have a stronger correlation coefficient (r = -.485) for the relationship between resilience and parental stress, compared to fathers with neurotypical children (r = -.370).

This could be because children with special needs tend to also have co-occurring medical/psychological conditions (Morozov, 2018; Munir, 2016), which may increase their susceptibility to severe COVID-19. For example, research shows that underlying mental health conditions (such as schizophrenia) and medical conditions (such as down syndrome) may increase the risk for severe COVID-19 (Centers for Disease Control and Prevention, 2021b). Relatedly, children with special needs tend to also have these high-risk mental health/medical conditions (Morozov, 2018; Munir, 2016). As such, fathers may be more protective of the child with special needs and may therefore, need to be more resilient to mediate the increase in parental stress.

2b and 3b. Can parental stress of fathers with neurotypical children/children with special needs be predicted by their levels of financial stress, perceived work-family balance and resilience during COVID-19?

Fathers with Neurotypical Children. Financial stress, perceived work-family balance and resilience have statistically significant predictions for parental stress for Fathers with neurotypical children during COVID-19. Financial stress is also the strongest predictor of parental stress (standardized coefficient = .323, p = .001). This suggests that we should focus on decreasing financial stress.

It should be noted, however, that our results suggest that perceived financial stress (not financial difficulty) is a statistically significant predictor for parental stress for fathers with neurotypical children. This suggests that fathers who are satisfied with their finances, may not have parental stress even if they are low on finances. Hence, we suggest that financial literacy programs be implemented for fathers with neurotypical children with an emphasis on the importance of 'financial satisfaction' or being satisfied with one's finances.

It is also noted that Resilience is a stronger predictor of parental stress for Fathers with neurotypical children (standardized coefficient = -.170, p = .042) compared to fathers with children with special needs (standardized coefficient = -.248, p = .080). According to the Walsh Family Resilience Theory, there are three domains that contribute to resilience in parents: family belief systems (i.e., maintaining a positive outlook), family organizational processes (i.e., positive interpersonal relationships) and family communication processes (i.e., collaborative communication) [Walsh, 2003]. This suggests that we should also consider the father as part of the family 'unit' and not as an individual. As such, we

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suggest that family resilience workshops can be targeted towards fathers with neurotypical children to reduce parental stress overtime.

Fathers with Children with Special Needs. In contrast, perceived work-family balance is the only statistically significant predictor for parental stress for fathers with children with special needs during COVID-19 (standardized coefficient = -.311, p = .037). As such, we should focus on increasing perceived work-family balance.

In general, there is a lack of community awareness about special needs and social stigma in parenting a child with special needs in Singapore (Goh, 2020). This suggests that employers are also less aware of the difficulties that their employees faced in parenting a child with special needs. Hence, we suggest to increase employer's awareness of the difficulties that their employees face when parenting a child with special needs. This is in line with the Third Enabling Masterplan's goal (launched in 2019) in building a more inclusive society for persons with disabilities in Singapore (Goh, 2021a).

4. Do differences exist between the parental stress of fathers with infants/young children, school-aged children and teens with special needs during COVID-19?

Statistically significant differences exist between the parental stress of fathers with infants/young children, school-aged children and teens with special needs during COVID-19 [F (2, 39) = 3.775, p = .032], with large effect sizes (= .16). This suggests that Fathers may have different concerns for their child with special needs at different age groups.

Firstly, a father of an infant/young child with special needs (aged 0-6 years old) may be concerned about their child's developmental outcomes (Centers for Disease Control and Prevention, 2021a). For instance, they may be stressed if their child is not able to crawl by 9 months and walk by 2 years old.

Secondly, a father of a school-aged child with special needs (aged 7-12 years old) may be concerned about their child's educational pathways and academic achievements. This is supported by Rimmerman and Duvdevani (1996) who stated that when children with intellectual disabilities start schooling at 7 years old, parents may start prioritizing their child's educational attainments.

Lastly, a father with teens with special needs (aged 13-18 years old) may be concerned about their teen's work-readiness skills as they transition towards preparation for work or be concerned about their self-help skills as they transition towards long term care planning [i.e., living in an Adult Disability Home] (McGuirk, 2016).

It should also be noted that there is a statistically significant difference (p = .036) between the parental stress of fathers of infants/young children with special needs (n =

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12, $M = 50.92$, $SD = 9.895$) and fathers of teens with special needs ($n = 14$, $M = 42.00$, $SD = 8.944$), with the former group having a higher mean parental stress score. This could be because children with special needs are often diagnosed during their infancy/ childhood (0-6 years old) and their fathers may still be learning to accept their child's recent diagnosis. This is supported by Hornby (1992) who argued that fathers often react intensely to their child's initial diagnosis and often feel guilty and disappointed, which may decrease their overall well-being. On the other hand, it could be possible that fathers of teens with special needs may have eventually accepted their child's diagnosis over the years and thus, experience lesser parental stress.

Currently, there is a lack of workshop/resources on special needs awareness for expecting couples or new fathers with an infant younger than 1 years old. As such, workshops/resources may be provided for expecting couples/new fathers who are at high risk of having a child with special needs (i.e., strong family history of special needs, having a child born prematurely, child having a genetic risk for chromosomal disorders) [Erbeli et al., 2019].

Feedback from Industry Practitioners

We have suggested 6 recommendations in total (2 for fathers with neurotypical children and 4 for fathers with children with special needs). We then sought feedback from 5 industry practitioners (1 Special Education Lecturer, 1 Special Education Teacher, 1 Social Worker and 2 Educational Psychologists) regarding our recommendations.

Recommendations for Fathers with Neurotypical Children

Recommendation 1—More financial literacy programs that teach fathers on the importance of 'financial satisfaction' or being satisfied with one's finances.

Some of the Industry Practitioners suggested that schools can implement these financial literacy programs and share findings from surveys about the relationship between income and happiness, to teach 'financial satisfaction'. For example, a recent study from the Institute of Policy Studies demonstrated that income does not 'guarantee happiness' (Tan, 2021). The results of the poll suggests that the key to happiness is to be contented with one's level of wealth and financial literacy programs may emphasize this aspect of 'financial satisfaction'.

Recommendation 2—More family resilience workshops that emphasizes on positive family relationships and open communication.

The Industry Practitioners suggested involving role-play activities on how fathers can learn to communicate better with their family. While others suggested using movie clips from 'family-friendly movies' (i.e., Lilo and Stitch) to emphasize on the importance of healthy communication with their family.

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Recommendations for Fathers with Children with Special Needs

Recommendation 1—More support should be catered for fathers with children with special needs to help alleviate parental stress.

Some of the Industry Practitioners suggested 'respite' programs for fathers with children with special needs. This may involve recruiting volunteers to entertain the children with games and activities, while the fathers engage in sports, such as soccer match, separately.

Recommendation 2—Extending insurance coverage for children with special needs.

The Industry Practitioners generally agreed that insurance companies will probably require funding from government agencies to even consider extending insurance coverage (hospitalization and critical illness) for children with special needs. Some also suggested that insurance (hospitalization and critical illness) can be provided for children with mild special needs who may be less prone to self-inflicting behaviors and/or medical conditions (Arkansas State University, 2019). The severity of the child with special needs can be determined by accompanying psychological/psychiatric reports or by looking at the Special Education School placement (i.e., schools catered for students with mild intellectual disabilities).

Recommendation 3—Increasing employer's awareness of the difficulties that their employees face when parenting a child with special needs.

Some of the Industry Practitioners suggested that community partners (i.e., SGenable) may consider spreading the awareness of special needs via public outreach programs. -

Recommendation 4 - More workshops/resources for new fathers/expecting couples who are at high risk for having a child with special needs.

The Industry Practitioners suggested that special education schools collaborate with hospitals for this workshop. Fathers who are at high risk for having a child with special needs can then be informed of these workshops by the paediatrician. These workshops can involve teaching fathers on ways to take care of their child with special needs and ideas in supporting their spouses.

LIMITATIONS AND FUTURE RESEARCH

Firstly, the present study has a small sample size of 171 fathers (in total) and it is difficult for the results to be generalized to all fathers in Singapore There was an even smaller sample size for fathers with children with special needs (n =42) which could explain the non-significant results for Hypothesis 3b (Faber & Fonseca, 2014). Despite so, it should be

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noted that this study is the first research of its kind in Singapore. As such, it may be used as an initial benchmark for future research involving more participants.

Secondly, the survey did not capture qualitative child-specific data, such as extent of child's functioning or common types of behavioural problems, which may also affect parental stress. Future research may, therefore, consider conducting focus group discussions and/or structured interview to collect more qualitative data to explore the other stressors that lead to parental stress in fathers.

Thirdly, the case-matching used for Hypothesis 1 is not very comprehensive because only one variable ('number of children') is used as a benchmark for selecting participants. This may influence the reliability of the results. Future research can consider recruiting more fathers with children with special needs for more reliable comparisons with fathers with neurotypical children. Hence, case-matching may no longer be necessary.

Future research may also consider examining parental stress of fathers post-covid to see if there are changes in parental stress levels compared to that seen during COVID-19 (data that was collected in our study). We can also look at the effect size of the t-test between parental stress of fathers with children with special needs and fathers with neurotypical children post COVID-19. Our results for hypothesis 1 had an effect size of Cohen's d = .56. If the post-covid effect size is smaller compared to our research's effect size (during COVID-19), it may suggest that the difference in parental stress is smaller after COVID-19. This could explain that COVID-19 is the reason for the increase in difference observed during COVID-19. If the post-covid effect size is larger than our research's effect size (during COVID-19), it may suggest that the difference in parental stress is greater after COVID-19. This may suggest that there may be other stressors that affect this difference post COVID-19.

CONCLUSION

This study aimed to compare the parental stress of fathers with neurotypical children and fathers with children with special needs in Singapore, during COVID-19. Results revealed that fathers with children with special needs tend to experience greater parental stress compared to fathers with neurotypical children. Their parental stress also has statistically significant correlations with financial stress, perceived work-family balance and resilience. Furthermore, all three variables studied are statistically significant predictors of parental stress for fathers with neurotypical children, while only perceived work-family balance is a statistically significant predictor of parental stress for fathers with children with special needs. Fathers with infants/young children also tend to have greater parental stress than fathers with teens with special needs. In view of the results, 6 recommendations were suggested (2 for fathers with neurotypical children and 4 for fathers with children with special needs). Despite so, this research has its limitations and future research can be conducted to address them. In overall, the parental stress of

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fathers (with and without children with special needs) should not be underestimated and the general public should be made aware of the difficulties that they faced. In doing so, it is hoped that more support can be offered for fathers.

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