

Research Article

Effects of Stress, Social Support, Feelings of Shame, and Loss of Face on Mental Health of Chinese Immigrant Mothers of Children with Developmental Disabilities in Canada

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Abstract: Social factors such as stress and social support impact mental health and might be associated with cultural factors such as feelings of shame and loss of face. **Methods:** This quantitative study examined sixty-five Chinese immigrant mothers of children with developmental disabilities (DDs) from the Great Toronto Area in Canada. Data was gathered through the following scales: Parental Stress Index-short Form, Oslo Social Support scale, Experience of Shame Scale, Loss of Face Questionnaire, Social Interaction Anxiety Scale and Social Phobia Scale, Center for Epidemiologic Studies Short Depression Scale, and General Self-efficacy Scale. **Findings:** Correlational analyses confirmed that shame was positively correlated significantly with loss of face ($r=.43^{**}$), social anxiety ($r=.62^{**}$), social phobia ($r=.38^{**}$), and depression ($r=.66^{**}$). Social support was negatively correlated significantly with depression ($r=-.28^{**}$), self-efficacy was negatively correlated with social phobia ($r=-.21^{**}$). Loss of face was positively correlated significantly with anxiety ($r=.36^{**}$) and depression ($r=.43^{**}$). Regression analyses indicated that shame ($Z= 4.44^{***}$) and loss of face ($Z= 2.36^*$) were the strongest mediators of effects of anxiety on mothers' depression. **Discussion:** Implications are discussed with regard to providing efficient services for the families with their specific cultural backgrounds and optimizing their mental health and well-being. **Conclusions:** These empirical findings confirmed that Chinese immigrant mothers of children with DDs experienced more depression, when they had more feelings of shame, loss of face, and anxieties. This study highlighted the impact of social and cultural factors on the mental health of Chinese immigrant mothers of children with DDs.

Keywords: Chinese Immigrant Mothers, Developmental Disabilities, Stress, Social Support, Shame, Depression.

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Introduction

Immigration to a new country impacts the social networks available for immigrant families. During pregnancy, intra-partum and post-partum periods, new immigrant families may experience barriers to adequate social support. Previous research has indicated that new immigrant mothers face more challenges and stressors in their lives during immigration and resettlement in Canada (Su & Hynie, 2011). For instance, cultural conflicts (Papp, 2017), new environmental adjustment, social isolation from family and friends (Johnson et al., 2017), discrimination (Nangia, 2013), less social support (Kilbride, 2000; Liamputtong, 2001), language barriers (Wright, 2014), a significant decline in occupational status (Hon, Sun, Suto, & Forwell, 2011), disposable income (Crossman, 2013), and poor housing (Wayland, 2007) create a multitude of post-migration challenges. Facing stressors may result in newcomers experiencing physical and mental illness (Lai & Hynie, 2010; Simich et al., 2004). Particularly, economic stress increases the risk for depression (Gjesfield et al., 2010).

Among immigrant families, some families are raising children with developmental disabilities (DDs). DDs constitute a significant portion of disabilities in children. DDs affect approximately 17% of children under the age of 18 years (Johnson, 2009). Persons with DDs have significant limitations in adaptive and cognitive functioning (Developmental Services Human Resource Strategy, 2008). This includes intellectual disabilities, sensory-related disabilities (e.g., related to hearing and vision), communication, and language disabilities. DDs include autism, intellectual disability, cerebral palsy, Down syndrome, and Rett syndrome (a rare genetic disease that causes developmental and nervous system problems) (Johnson, 2009). People with DDs require more help to learn, understand, and use information than others (Developmental Services Ontario, 2016). According to the population profile report from the Citizenship and Immigration Canada government website, prevalence of 0.8% is reported for “cognitive/behavior/nervous system disorder” (such as autism, behavior disorder) (Citizenship and Immigration Canada, 2015), but the number of DDs among the new immigrant families in Canada remains unknown. Structural barriers

faced by parents of children with DDs pose challenges to parents and their families (Khanlou et al., 2015). New immigrant families of children with DDs can further face more difficulties in a new country, these challenges may include learning a new language, cultural adaptation, new social rules, finding employment, and frustrations with the healthcare system (Riggio & Avalos, 2017). Recent studies showed that COVID-19 pandemic has exacerbated hardship and challenges for parents of children with disabilities because of reductions in services, school closures and challenges in caring for children, difficulties joining the therapy appointment and obtaining services, and difficulties socializing with their friends. As our study took place before the pandemic, we are unable to comment on the specific impacts of the pandemic on Chinese Canadian immigrants of families with DDs, the population of focus for our study. However, we surmise that additional stressors experienced by the families, particularly families of children with special needs might be facing more challenges during COVID-19.

Chinese Canadian Immigrants of Children with DDs in Canada

Chinese immigrants from Mainland China are the highest population of immigrants migrating to Canada every year since 2000 (Citizenship and Immigration Canada, 2002). Most of the Chinese migrants arriving in Canada in recent years were young, educated, skilled urban professionals (Hou et al., 2019). Cultural changes pose new challenges for family life, expression of distress, and individual identity (Bhugra, 2004). In our previous study, we found that many Chinese new immigrants experience less social support, low income and low social status, job insecurity, and poor social relations in Canada (Su & Hynie, 2011).

Chinese immigrant families raising children with disabilities face challenges, such as language barriers, adaptation to the new culture, and have different views about their child’s education (Lai & Ishiyama, 2004), long wait times to access specialty care, delays in diagnosis and treatment (Liddy et al., 2020), and occupational changes (Hon et al., 2011). In our qualitative study (Su, Khanlou, & Mustafa, 2018) we found that Chinese

immigrant mothers of children with DDs were experiencing a variety of stressors in Canada, including limited financial resources, excessive paperwork, long waiting times, lack of English-language proficiency, limited knowledge of social services, emotional strain, discrimination, transportation difficulties, and dispersed services, not enough funding from government, and mothers receiving blame. They also reported barriers of cultural stigma such as feelings of loss of face and avoiding talking about the family situation. Some mothers also reported the support they have received from government funding, public health, school, church, family, and friends.

Traditional Chinese Cultural Beliefs towards DDs

Culture shapes the expression and recognition of mental health problems (Kramer et al., 2002). Cultural factors such as social stigma, shame, and saving face often prevent Asians from seeking behavioural health care, diagnosis, and treatment of mental disorders (Kramer et al., 2002), and impact how parents of children with DDs deal with life stress, utilize available resources, and choose relevant coping strategies (DeLambo et al., 2011).

Experience of shame among Chinese immigrant mothers of children with DDs

Previous studies show that Chinese immigrant parents of children with DDs experience great feelings of shame from the larger community (Tews & Merali, 2008) with mothers being blamed by others for giving birth to a child with DDs. Experiencing shame is a very painful self-conscious human emotion and involves negative introspection and evaluation of self as a failure and a sense of worthlessness and powerlessness (Ho, Fu & Ng., 2004). Traditional Chinese culture places value on the avoidance of shame (Bedford & Hwang, 2003) and advocates social harmony and the ability to save face to preserve the public appearance of family and individual, so as to avoid exposure to personal weakness (Dowling & Dolan, 2001). Having children with disabilities, these parents might feel shameful that their children may not meet their general expectations for pursuing academic success in traditional Chinese culture and normal development standards (Tews & Merali, 2008); and parents are more susceptible to negative feelings such as

anxiety, fear, and psychological distress (Li, et al., 2005; Zhong, et al., 2003). Feeling shame is one of the reasons why Asians have stigma which can be characterized as a mark of disgrace to access professional therapists (Hechanova & Waelde, 2017). Furthermore, Chinese immigrant mothers of children with DDs may experience anti-Chinese stigma and discrimination in Canada under COVID-19 pandemic. Since the outbreak of COVID-19, some people of Chinese descent have been blamed and targeted in the public for being originators of the pandemic and experienced anti-Chinese discrimination globally, which elicits hostilities, physical violence, and hate crimes (Mamuji, 2021).

Loss of face among Chinese immigrant mothers of children with DDs

Past research has found that families of children with DDs experience shame and have the feeling of loss of face if they discuss their emotions or stress of having children with DDs in public (Holroyd, 2003; Kramer et al., 2002). A person with a disability is regarded as useless and a burden (Liu, 2001). Losing face (Lai, 2006) in a traditional Chinese culture that emphasizes the “face” and bringing honour and reputation to their family, and expecting children to excel (Holroyd, 2003). When a family has a child with DDs, parents face great pressure and may blame themselves for not giving good genes to their child (Fulgini & Pedersen, 2002). If parents cannot recover from the negative feeling of loss of face, in the long-term run, it can impact their health and mental health.

Stress and Social Support of New Immigrant Families of Children with DDs in Canada

Parenting a child with DDs is stressful for both parents (Weiss, 2002). Immigrant families of children with DDs face a variety of stressors and less social support in Canada (Emerson, 2003; Jennings, Khanlou, & Su, 2014; Khanlou et al., 2015, 2016; Su et al., 2018). Stress has been defined traditionally either as a stimulus (stressor) or as a response characterized by physiological arousal and negative affect, especially anxiety (Folkman, 2013). Parents of children with intellectual disabilities (ID) report higher levels of child-related stress and less subjective well-being than parents of normally developing offspring (Padden & James, 2017). Parenting

a child with DDs has its own set of additional challenges or difficulties related to the child's disability, which impact on parents' well-being (Quian, 2012). Compared to families of children without DDs, mothers of children with DDs are more likely to have higher levels of stress, anxiety, employment changes, more health problems (Dowling & Dolan, 2001), occupational changes (Hon et al., 2012), depression, and poorer physical health (Padden & James, 2017). These families also experience additional stressors such as poverty, limited knowledge to seek and access services, and feelings of belittlement by society (Jennings et al., 2014). Parents need support and services in order to provide their children and themselves a better personal and family life (Jennings et al., 2014; Wang, 2016), and flexible and timely support programs (Lee et al., 2021).

The negative effects of stress can be buffered by social support (Leinonen, 2002), which can enhance an individual's coping mechanisms (Bhugra, 2004). Simich and her colleagues (2005) found that social support plays an important role on health (physical/ mental well-being) and can alleviate the negative effects of stress among immigrants in Canada. In the past decade, researchers have examined social support and its effects on families of children with DDs (Canary, 2008; Dunst, Trivette, & Hamby, 2007; Su et al., 2018). For example, in the study by Lim and Zebrack (2008), social support mediated and predicted health and quality of life of mothers of children with disabilities. Receiving helpful social support might alleviate the high levels of stress for mothers of children with DDs, buffer family stress and promote coping. Wang's study (2016) found that parents of young children with autism spectrum disorder (ASD) are more likely to experience high parental stress compared to other parents, and social support buffers stress.

Anxiety, Depression, and Self-efficacy of Immigrant Mothers of Children with DDs

Parents of children with DDs experience depression, anxiety, and burnout (Weiss, 2002). Mothers usually take the most responsibility to take care of their children with DDs (Murphy et al., 2006). Mothers raising a child with disability experienced more anxiety and depression than mothers of children without disability

(Ramzan & Minhas, 2014). A high portion of parents of children with DDs have been diagnosed as severely anxious and two-thirds were clinically depressed (Bitsika & Sharpley, 2004). Parents worry about their child's future, their child's independence, and their acceptance in the community (Khanlou et al., 2015; Weiss, 2002).

Parents of children with ASD face unique challenges, affecting their self-efficacy (Dunn et al., 2001). Parents of children with ASD were found to have the lowest rates of parenting self-efficacy (Smart, 2016). Self-efficacy is the belief in one's competence to cope with stressful circumstances and to exert control over challenges (Luszczynska et al., 2005); it can promote one's success and development (Ardelt & Eccles, 2001). Bandura (1977) defined self-efficacy as the levels of confidence or belief individuals have in their ability that one can successfully perform certain behaviours that will produce expected outcomes to reach certain goals. While high self-efficacy can lead to more persistence in pursuing the goal and problem solving, low self-efficacy is linked with high levels of trait anxiety/neuroticism, social anxiety/anxiety disorders symptoms, and depressive symptoms (Bandura, 1997). Self-efficacy of parents is an important predictor influencing parents' involvement in their children's intervention and treatments of autism (Smart, 2016).

Effects of Social Factors, Cultural Beliefs, and Mental Health on Chinese Immigrant Mothers of Children with DDs in Canada

While a growing body of literature exists on experiences of native-born mothers, to date limited attention has been given to mental health and well-being concerns of immigrant mothers of children with DDs in their new country of resettlement in Canada through a quantitative lens. To our knowledge, no research exists to explore the relationship of all these connections between stress, the role of social support, the experience of shame, the feelings of loss of face, anxiety, depression, and self-efficacy on the mental health of Chinese immigrant mothers of children with DDs in Canada. To fill the gap, this quantitative research was conducted to examine these associations.

The major objective of this study was to provide a better understanding of the relationships among several

factors such as parental stress, social support, loss of face, the experience of shame, anxiety, depression, and self-efficacy among Chinese immigrant mothers of children with DDs. We predicted that stress, social support, self-efficacy, shame, loss of face, and anxiety would influence depression in this group of mothers in Canada.

On the basis of existing literature the following hypotheses were formulated:

Hypothesis 1: Chinese cultural beliefs such as the experience of shame and loss of face will be positively related to anxiety/phobia and depression and negatively with social support and self-efficacy of Chinese immigrant mothers.

Hypothesis 2: Stress will be positively related to the experience of shame, loss of face, anxiety/phobia, and depression and negatively with social support and self-efficacy in Chinese immigrant mothers of children with DDs in Canada. Social support will be positively related with self-efficacy and negatively related to the experience of shame, loss of face, anxiety/phobia and depression in Chinese immigrant mothers of children with DDs in Canada. Self-efficacy will be negatively related with anxiety, depression, shame, and loss of face.

Hypothesis 3: Cultural factors such as shame and loss of face will mediate the effects of anxiety on depression of Chinese immigrant mothers of children with DDs in Canada.

Methods

A quantitative approach using survey methodology was applied to conduct this research.

Participants

Total sixty-five Chinese immigrant mothers of children with DDs were recruited by the first author through flyers in three community organizations and in Great Toronto Area. Mothers had at least one child with developmental disabilities in their families. Mothers were tested on various measures which included demographic information [Table 1: Characteristics of participants]. All measures were translated into simplified Mandarin by the first author.

Table 1. Characteristics of Study Participants

Characteristics	Mothers N =65
Age in Years	
Mean	44.67
Range	28-69
Marital Status	
Currently married	57
Divorced	7
Years lived in Canada	
Mean (years)	14.80
Range (years)	2.5-43
Number of children per family	
Mean	1.92
Range	1-5
Average of children	1.05
Gender of children with DDs	
Boys	48
Girls	17

Measures

Demographic Information. Mothers completed a questionnaire about parents’ occupation, marital history, parental education, employment status and income, birth dates of children, and the number of persons in the household. We also asked mothers about the number of years living in Canada.

The Parental Stress Index-Short Form (PSI-SF) (Abidin, 1995). It is a 36-item five-point self-report measure designed to assess parents' feelings in the past week regarding their role as a parent. This instrument yields scores for several factors (Parent/Child dysfunctional Interactions, Parent Distress, and Difficult Child) in addition to a Total Stress score. In our sample, the PSI-SF had a coefficient alpha of .91.

Oslo Social Support Scale (OSSS) (Dowrick, 1998). This scale is a three-item rating scale for the measurement of social support. The three questions cover the reported number of close friends, how much concern you get, and how easy it is to get help from your neighbours. We also added three questions related to instrumental support and emotional support in this scale. One example is: How easy is it to get advice from neighbours (or relatives) if you should need it. Item 1 and Item 5 are rated on a 4-point scale, while Item 2 and Item

3 are rated on a 5-point scale. In our sample, the OSSS had a coefficient alpha of .76.

The Experience of Shame Scale (ESS) (Andrews et al., 2002; Qian et al., 2000). The ESS contains a total of 25 items and measures three areas of shame: characterological shame, behavioural shame (BES), and bodily shame (BOS). Questions in this scale relate to how often they felt shame in different conditions. Subjects were asked to rate each item from "1" (not at all) to "4" (often). Higher scores indicated higher levels of shame proneness. In our sample, the ESS had a coefficient alpha of .96.

Loss of Face Questionnaire (LOF) (Zane, 2000). It has been identified as a key and often-dominant interpersonal dynamic in Asian social relations (Sue & Morishima, 1982). It is defined as the threat or loss of one's social integrity. It has 21 items and is rated on a 7-point Likert scale, with 1 as strongly disagree to 7 as strongly agree. One item example: "I am more affected when someone criticizes me in public than when someone criticizes me in private." In our sample, the LOF had a coefficient alpha of .86.

Social Interaction Anxiety Scale (SIAS) and Social Phobia Scale (SPS) (Mattick & Clarke, 1998). This set of companion scales is commonly used in self-report instruments for social anxiety. They assess the main fears of interaction with others and the fears of being observed while doing routine activities, and avoidance of social phobia, focusing respectively on interaction fears and more specific performance-based fears. Each scale consists of 20 items based on a Likert-type scale ranging from 0 (not at all) to 4 (extremely). In our sample, the SIAS had a coefficient alpha of .91, the SPS had a coefficient alpha of .95.

Center for Epidemiologic Studies Short Depression Scale (CES-D) (Radloff, 1977). The CES-D is one of the most common screening tests for helping an individual to determine his or her depression quotient during the past week. The 20-item self-administered scale measures the major components of depressive symptomatology on a 4-point scale ranging from 0 (rarely or none of the time) to 3 (most or all of the time), including depressive mood, feelings of guilt and worthlessness, psychomotor retardation, loss of

appetite, and sleep disturbance. Total scores can range from 0 to 60. In our sample, the CES-D had a coefficient alpha of .89.

General Self-efficacy Scale (GSES) (Schwarzer & Jerusalem, 1995). The General Self-Efficacy Scale is a 10-item psychometric scale that is designed to assess optimistic self-beliefs to cope with a variety of difficult demands in life. It is 4-point Likert scale, with 1 is "Not at all true" to 4 is "Exactly true". A sample item is, "Thanks to my resourcefulness, I can handle unforeseen situations." In our sample, the GSES had a coefficient alpha of .91.

Procedure

This study was approved by the ethics committee York University. The first author administered all the surveys in three community centres. Participants voluntarily attended this study. It took mothers about 45 minutes to complete all the questions. After answering all the questions, participants received \$10, a written debriefing form, and supporting resource information. The survey was translated into Mandarin by the first author and back-translated by a second bilingual Mandarin speaker.

Data Analyses

We conducted descriptive analyses (e.g., Means, SDs) to establish the properties of these measures among Chinese immigrant mothers of children with DDs in Canada [Table 2: Means and standard deviations of stress, support, experience of shame, loss of face, anxiety, phobia, depression, and self-efficacy on participants]. We also conducted correlation analyses on the key variables [Table 3: Correlations between stress, support, experience of shame, loss of face, anxiety, phobia, depression, and self-efficacy on participants]. Finally, hierarchical regression analyses were conducted to determine the unique predictive ability of key constructs and test possible interaction effects when seeking to predict levels of emotional adjustment [Table 4: Hierarchical regression analysis for the significant main effects of anxiety on depression by loss of face], [Table 5: Hierarchical regression analysis for the significant main effects of anxiety on depression by shame].

Table 2. Means and standard deviations of stress, support, experience of shame, loss of face, anxiety, phobia, depression, and self-efficacy on participants

Characteristics		Mothers <i>N</i> = 65
Stress	<i>M</i>	83.28
	<i>SD</i>	15.35
Support	<i>M</i>	15.00
	<i>SD</i>	3.97
Experience of shame	<i>M</i>	48.66
	<i>SD</i>	15.94
Loss of face	<i>M</i>	87.82
	<i>SD</i>	15.30
Anxiety	<i>M</i>	23.00
	<i>SD</i>	11.27
Phobia	<i>M</i>	23.80
	<i>SD</i>	9.46
Depression	<i>M</i>	19.17
	<i>SD</i>	9.49
Self-efficacy	<i>M</i>	23.28
	<i>SD</i>	6.08

To test how loss of face, and experience of shame were related to depression of Chinese immigrant mothers of children with DDs, we performed a series of regression analyses. Standard multiple regressions were conducted with depression as the dependent variable, and anxiety, loss of face and experience of shame as the independent variables. Analyses were performed using SPSS REGRESSION for evaluation of assumptions. Data were screened and no outliers among the cases were found. All assumptions were met, and the data showed a normal distribution.

For all analyses, all the variables were centred prior to analyses to reduce multi-collinearity (Kraemer & Blasey, 2006). For the first regression check on the

relationship between loss of face, anxiety, and depression, centred anxiety was added in the first step. The second step included loss of face. The third step included the two-way interactions between anxiety and loss of face. For the second regression check on the relationship between loss of face, social support, and depression, centred loss of face was added in the first step. The second step included social support. The third step included the two-way interactions between loss of face and social support.

Findings

Descriptive Information

First, descriptive statistics were computed to examine the psychometric properties of the various measures. All the means and standard deviations of the variables were listed on Table 2. There were 22 out of 65 (34%) mothers' scores on stress above 90 which are considered to be experiencing clinically significant parenting stress. There were 10 out of 65 (15%) mothers' scores on depression were above 28 which are considered to be experiencing the depressed situation. There were 4 out of 65 (6%) mothers' scores on social anxiety were above 43 which are considered to be experiencing social anxiety situation. There were 7 out of 65 (11%) mothers' scores on phobia were above 34 which are considered to be experiencing social phobia situations. All of the measures had good acceptable levels of internal consistency (.79 to .96). Cronbach alphas were as follows: stress (.91), social support (.79), shame (.96), loss of face (.86), social anxiety (.91), social phobia (.84), depression (.89), and self-efficacy (.91).

Table 3. Correlations between social support, experience of shame, loss of face and mental health of Chinese immigrant mothers of DDs

	stress	support	shame	loss of face	anxiety	phobia	depress	efficacy
stress	1	0.21	-.02	-.08	.09	-.06	-.13	.16
support	0.21	1	-.21†	-.23†	.03	.06	-.28*	-.22
shame	-.02	-.21†	1	.43***	.62***	.38***	.66***	-.11
loss of face	-.08	-.23†	.43***	1	.36***	.21†	.43***	.04
anxiety	.09	.04	.62**	.36**	1	.71**	.40***	-.20
phobia	-.06	.06	.38**	.21†	.71**	1	.41***	-.21†
depress	-.13	-.28*	.66***	.43***	.40***	.41***	1	-.19
efficacy	.16	-.22	-.11	.04	-.20	-.21†	-.19	1

* p < .05. ** p < .01. ***p < .001. † .05 < p < .1

Correlations among all the variables on the Chinese immigrant mothers of children with DDs

Pearson correlations were calculated for each variable which included parental stress, social support, experience of shame, loss of face, anxiety, social phobia, depression, and self-efficacy [Table 3: Correlations between social support, experience of shame, loss of face and mental health of Chinese immigrant mothers of DDs]. Experience of shame was positively correlated with loss of face, anxiety, phobia, and depression (rs=.38 - .66, ps =.00). Loss of face was positively correlated with anxiety (r= .36, p=.00). Depression was positively correlated with social anxiety, loss of face, and social phobia (rs=.39-.43, p=.00), which was positively correlated with social Anxiety (r= .71, p=.00). Social support was significantly negatively correlated with depression (r=-.28, p=.03).

Regression Analyses on Depression and Anxiety

To check if loss of face mediated the relationship between anxiety and depression Table 4 displays the F ratio, degrees of freedom, standardized regression coefficients (β), and R2. The first step of the regression revealed a significant positive prediction of anxiety for depression, R2adj = .15, F (1, 63) = 12.32, p = .00. Anxiety of Chinese mothers (β = .40, p =.00) increased their depression.

When loss of face was added in the second step, the equation model significantly improved, R2ch = .09. Fch (1, 62) = 7.49, p = .01. Anxiety (β = .29, p=.02) still increased depression. Loss of face was associated with increased depression (β = .32, p = .01). Both factors explained 33% variance in depression (R2 = .25; R2adj = .23). But the interaction of the two did not significantly predict depression, R2ch = .02. Fch (1, 61) = 1.07, p = .31.

When controlling for loss of face, anxiety variable ($\beta = .40, p = .00$) was still significant ($\beta = .29, p = .02$). We therefore examined whether loss of face was a mediator of the relationship between anxiety variable and depression. Using the procedures suggested by Baron and Kenny (1986), a series of regressions are used to test the significance of the paths from the predictor to the mediator, the mediator to the dependent variable, and the predictor to the dependent variable. We tested the relationship between anxiety and depression; the relationship between anxiety and loss of face; and the relationship between loss of face and depression. Full mediation occurs when the path from the predictor to the dependent variable drops to non-significance when the path through the mediator is included. Partial mediation occurs when the direct path from the predictor to the dependent variable is significantly reduced by the inclusion of the indirect path.

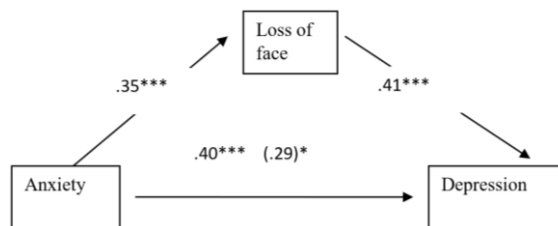
Table 4. Hierarchical regression analysis for the significant main effects of anxiety on depression by loss of face

Predictor	F	df1	df2	R square	β
<i>Step one</i>					
Anxiety					.40*
Total Model	11.79***	1	63	.16	
<i>Step two</i>					
Anxiety					.2
Loss of Face					.3
Anxiety*Loss of Face					.1
Total Model	7.05**	1	62	.24	

* $p < .05$, ** $p < .01$, *** $p < .001$

As can be seen in Figure 1, the relationship between anxiety and depression drops from $\beta = .40$ ($p = .00$) to still significant $\beta = .29$ ($p = .02$), when the loss of face was included in the equation. The relationship between anxiety and loss of face was significant ($\beta = .36, p = .00$) and the relationship between loss of face and depression was also significant ($\beta = .43, p = .00$). A Sobel Test on the drop in the predictive power of anxiety confirmed that loss of face significantly partially mediated the effect of anxiety on depression, $Z = 2.36, p = .02$.

Figure 1. Mediation of Relationship between Anxiety and Depression by Loss of Face



Notes: .40*** is the standardized coefficient of anxiety; .29 is the standardized coefficient of anxiety when controlling loss of face. .35*** and .45*** are the standardized coefficients

To check if the experience of shame mediated the relationship between anxiety and depression, the same procedures included the first step for regression analysis was entered depression as dependent variable and anxiety was independent variable; the second step included anxiety and experience of shame both are independent variables, and the two-way interaction of shame and anxiety was the third step. Table 5 displays the F ratio, degrees of freedom, standardized regression coefficients (β), and R2. The first step revealed a positive prediction of anxiety increased their depression ($\beta = .40, p = .00$), $R^2_{adj} = .15, F(1, 63) = 12.32, p = .00$. With the experience of shame was added in the second step, the equation model was significantly improved, $R^2_{ch} = .27, F_{ch}(1, 62) = 28.89, p = .00$. The prediction of anxiety dropped to be not significantly linked to depression ($\beta = .00, NS$). Experience of shame was found to be associated with increased depression ($\beta = .65, p = .00$). Both factors explained 27% variance in depression ($R^2 = .43; R^2_{adj} = .41, F(1, 62) = 28.89, p = .00$). The interaction of the two was not significantly related to depression, $R^2_{ch} = .05, F_{ch}(1, 61) = 3.53, p = .07$. These results suggest that Chinese immigrant mothers who have more anxiety and more experience of shame might be more likely to have depression symptoms.

When controlling for experience of shame, anxiety variable was not significant ($\beta = .00, p = .99$). We therefore examined whether shame was a full mediator of the relationship between anxiety variable and depression. Using the same checking procedures suggested by Baron and Kenny (1986), the relationship between anxiety and depression, the relationship between anxiety and shame; and the relationship

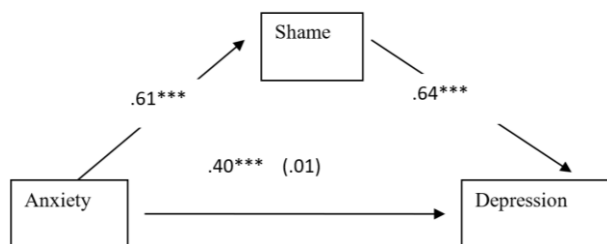
between shame and depression were tested. Full mediation occurs when the path from the predictor to the dependent variable drops to non-significance when the path through the mediator is included. As can be seen in Figure 2, the relationship between anxiety and depression drops from $\beta = .40$ ($p = .00$) to non-significant, $\beta = .01$ ($p > .05$), when shame was included in the equation. The relationship between anxiety and shame was significant ($\beta = .62$, $p = .00$) and the relationship between shame and depression was also significant ($\beta = .66$, $p = .00$). A Sobel Test on the drop in the predictive power of anxiety confirmed that experience of shame significantly fully mediated the effect of anxiety on depression, $Z = 4.44$, $p = .00$.

Table 5. Hierarchical regression analysis for the significant main effects of anxiety on depression by shame

Predictor	F	df1	df2	R square	β
<i>Step one</i>					
Anxiety					.40***
Total Model	11.79***	1	63	.16	
<i>Step two</i>					
Anxiety					.01
Shame					.64***
Total Model	26.95**	1	62	.26	
<i>Step three</i>					
Anxiety					-.07
Shame					.57***
Anxiety * Shame					.25*
Total Model	5.45*	1	62	.24	

* $p < .05$, ** $p < .01$, *** $p < .001$

Figure 2. Mediation of Relationship between Anxiety and Depression by Experience of Shame



Notes: .40*** is the standardized coefficient of anxiety. .01 is the standardized coefficient of anxiety when controlling shame. .61*** and .64*** are the standardized coefficients

Discussion

The findings of this study provide novel information on the experiences of Chinese immigrant mothers of children with DDs in Canada, which we discuss in further details below.

Cultural Beliefs about Experiences of Shame and Loss of Face. The results suggest that traditional Chinese cultural beliefs such as the experience of shame and loss of face influence the mental health of Chinese immigrant mothers of children with DDs. Cultural beliefs including experiences of shame and loss of face were positively associated with anxiety, phobia, and depression of the mothers and accounts for some degree of the relationship between anxiety and depression. The more feelings of shame and loss of face mothers experienced, the more anxiety, social phobia, and depression they were reporting. These findings also concur with our previous qualitative research (Su, Khanlou, & Mustafa, 2018) indicating that the loss of face and shame are important cultural context factors and have impacts on the psychological adjustment and well-being of Chinese immigrant mothers of children with DDs (Su et al., 2018). Cultural factors which include cultural values and beliefs embedded into contextual settings may be stressors that affect adaptations of immigrants (Ghosh & Magana, 2009).

Past study showed that Chinese cultural stigma which is defined as negative attitudes (prejudice) and negative behaviour (discrimination) toward people with mental health problems towards DDs also increases parental feelings of loss of face and shame (Yin et al., 2020). Knowing a child is diagnosed with DDs is a family crisis for parents and brings negative emotions, stress and anxieties based on the cultural perspectives on disabilities. These include feelings of out-of-control, powerless, self-blame, sadness, not fulfilling societal anticipation for giving a birth of healthy child, and saving family face in the community (Huang et al., 2010). These negative thoughts have an impact on mothers' thoughts, behaviors, and emotions. For example, some mothers are so distressed and anxious that they do not want to attend social parties. Families of children with DDs experience social rejection and discrimination from neighbours, schools, and strangers (McCabe, 2007).

Chinese immigrant mothers of children with DDs reported more depression when they experienced more

experiences of shame and anxiety, and reported more depression when they experienced more loss of face and anxiety. Rezendes and Scarpa (2011) found that parents of children with autism spectrum disorders (ASDs) experience increases in stress, anxiety and depression, which are also associated with child behaviour problems related to ASDs. This result can be extrapolated to other East Asian cultures. Asian parents may rely on love withdrawal, shaming, and guilt induction more so than European American parents (Wu et al., 2002). Shame plays a core role in influencing the development of social anxiety (Zhong et al., 2008).

Stress and Social Support. In this study, social support was associated with decreased depression. The more social support that Chinese immigrant mothers of children with DDs had, the less depressed they were. This is consistent with previous study that high levels of social support are associated with lower levels of depressive symptoms (Surkan et al., 2006). New immigrant mothers may experience mental health problems and depressive symptoms which are associated with social isolation, and limited access to appropriate social support (Ahmed et al., 2008). Our qualitative study (Su et al., 2018) found that some mothers reported that they quit their regular jobs in order to have flexible time to look after their children with special needs. Some mothers received support from a spouse/partner, parents, and other friends, however, they hoped to receive sufficient financial and emotional support. Our study also found that some mothers were willing to learn about developmental disabilities in order to help increase their children's social and living skills, but they experienced accessibility barriers such as support services, and language barriers. It is essential for the mothers to receive more social support to reduce their stress and remove access barriers, such as English proficiency (Khanlou et al., 2014, 2017; Su et al., 2018).

Our findings also showed that social support was marginally associated with decreased level of loss of face and experience of shame. This is consistent with our qualitative study (Su et al., 2018) in which cultural stigma had a very negative impact on the perception of social support for Chinese immigrant mothers of children with DDs in Canada. Negative thoughts and stigma might give rise to parental stress, complications in marriage, increased feelings of loss of face, and less motivation to seek support from different resources (Su et al., 2018). Research shows that emotional support is a basic

provision of close personal relationships and is an important determinant of satisfaction among these relationships (Cunnigham & Barbee, 2000). Although our study did not find a relationship between stress, cultural beliefs, and mental health, we found a relationship between social support, cultural beliefs, and the mental health of mothers. This is consistent with some past research that highlights social support as a buffer to mental health that alleviates the negative effects of stress (Hernandez-Plaze et al., 2006; Su & Hynie, 2011). Receiving proper social support might alleviate high levels of stress for the mothers of children with DDs, buffer family stress, promote coping, and reduce potential negative impacts on developmental outcomes (Armstrong, et al., 2005).

Anxiety, Depression, and Self-efficacy. Mothers of children with DDs experience more depression than men; and single mothers experience more than married mothers (Small, 2010). Parents, particularly mothers, experience a heavy burden and health and mental health problems, such as depressive symptoms and poor physical health (Allik et al., 2006; Smith & Grzywacz, 2014). We found that anxiety in Chinese immigrant mothers of children with DDs was significantly associated with shame, loss of face, phobia, and depression. The findings also confirmed that mental health outcomes such as social anxiety, phobia, and depression were associated with each other and were linked with increased feelings of shame and loss of face significantly with increased levels of depression, social anxiety, and social phobia. Moreover, social support is linked with decreased depression and marginally associated with the decreased loss of face. More self-efficacy decreased the level of social phobia. This is consistent with previous study (Smart, 2016). Parents of children with ASD may be at risk for lower self-efficacy which is related to high risk of poor treatment outcomes (Smart, 2016). Self-efficacy is linked to challenges which families of children with DDs experience and to hardiness (more sense of control over the life events). Previous research has shown inconsistent results for the self-efficacy of parents of children with ASD. For instance, Fields (2006) did not find a relationship between depression and the self-efficacy of parents in parents of children with ASD. One study showed parenting self-efficacy was negatively correlated with depressive symptoms (Heerman et al., 2017). These inconsistent results might be due to sampling sizes,

range of children's ages, and comparison groups (Fields, 2006; Heerman et al., 2017; Meirsschaut et al., 2010; Rutgers et al., 2007).

Limitations of the Study and Directions for Future Research

Our quantitative study yielded several novel findings and had several limitations which we outline here. First, this study only focused on Chinese immigrant mothers of children with DDs. Fathers also play an important role in raising and educating their children in their families. Fathers should be recruited in a quantitative study in the future. Fathers' involvement with their children contributes to the well-being of their children (Lamb, 2010). Immigrant fathers (Khanlou et al., 2015) of children with DDs experience economic challenges, social and cultural influences, and barriers to accessing health services in the post-migration setting (Khanlou et al., 2015). Fathers are regarded as significant powerful figures and leaders of the family in East Asian cultures such as China which is influenced by Confucian ideology (Dinh & Nguyen, 2006). A second limitation is related to the recruitment region of mothers. All the immigrant mothers were recruited from a large urban city Toronto, where mothers might be more likely to have social support and available services. Recruiting mothers from across regions should be considered in the future. A third limitation is the set of self-report measures that were used in this study might show the participants' response biases. However, all the surveys were made understandable and anonymous, the administrator double-checked if the answers kept consistent, in this study had good reliability. The last limitation is the cross-sectional design of our study since it cannot indicate causal relationships rather than predict the associations. Future research could focus on longitudinal or experimental study designs to examine the impacts of coping strategies on stress and adjustment outcomes of immigrant mothers of children with DDs.

Implications for Immigrant Mothers of Children with Developmental Disabilities

Social support is regarded as a protective factor to alleviate pressures from traditional cultural beliefs and depression among families of children with DDs as well as increasing families' resilience when people are exposed to significant traumatic events (Grote et al.,

2007), although parenting children with DDs brings adjustment challenges (Naseef, 2001), and increases emotional distress (Su et al., 2018). Mothers need long-term social support from their families, their friends, neighbors, professionals, and communities. Social networks can maintain the social connections with others to avoid social isolation and loneliness, and help parents seek useful social services for their children with DDs during resettlement in Canada. Families, social workers, and school professionals need to collaborate to provide appropriate services and resources to help support families of children with DDs.

Our results point toward self-efficacy having a negative impact on social phobia. Past research found that lower parenting self-efficacy was related to feeling anxious, depressed, frustrated, perceived less social support, less improvement in children's psychotherapy, as well as higher levels of stress (Shumow & Lomax, 2002), and poor treatment involvement and outcomes (Warren et al., 2011). It is important to increase parents' self-efficacy through parenting practices, experience sharing, and successful coping strategies (Smart, 2016). Also, perceived social or partner support can influence parenting self-efficacy. It is important for therapists to be aware of this in order to increase parents' self-efficacy for success in therapy since some mothers' experience depression and have lower self-efficacy.

We found that Chinese cultural beliefs such as shame and loss of face impact the mental health of mothers of children with DDs. It is important for parents to be supported to hold positive cultural beliefs to avoid parents' anxiety, phobia, and depression. Thus, developmental service providers, community service workers, mental health workers, and other professionals can help address cultural stigma through culturally sensitive education and social support.

Conclusion

Our empirical findings highlight the impact of social and cultural factors on the mental health of Chinese immigrant mothers of children with developmental disabilities in Canada. Experiences of social support, self-efficacy, and traditional Chinese beliefs such as feelings of shame and loss of face all appear to be important constructs in how Chinese immigrant mothers experience life challenges and difficulties in a settlement in Canada. This study

documents the relations between social support, self-efficacy, traditional cultural beliefs, stress, and mental health (social anxiety and depression) in immigrant mothers of children with developmental disabilities. It provides a better understanding of immigrant mother's experiences of themselves and their families, mental health and well-being, particularly, it helps to understand the impact of cultural beliefs and stigma on their mental health of raising children with developmental disabilities. It is essential for community and service providers to provide social support and appropriate services, promote social acceptance, increase self-efficacy and resilience, and advocate community belonging in families of children with developmental disabilities. It will be helpful to reduce the cultural stigma and decrease the subjective feelings of shame and loss of face toward raising children with developmental disabilities. Some language-specific workshops for parents and appropriate training programs for children about receiving education and seeking services and resources are needed to help reduce mothers' stress and cultural stigma, and to make use of the support system in the treatment process. Findings from it can be used by community organizers, program planners, school board leaders, and policymakers as a resource across sectors to support culturally sensitive and family-oriented services.

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