

Predictors of Maternal Distress Among Mothers in Economic Hardship: A Classification and Regression Tree Analysis (CART)

Wan Har Chong¹, Daniel John Rongwei Wen², and Esther Chor Leng Goh²

¹ National Institute of Education, Nanyang Technological University

² Department of Social Work, National University of Singapore

A recurrent observation in poverty research is the association between many attendant stress factors and the high incidence of maternal distress. In this study, we reason that such risk factors do not preclude mothers from possessing adaptive capacities, through perceived parenting efficacy and family hardiness, as buffers against two common distress sources in low socioeconomic status (SES) households—perceived children’s emotional and behavioral problems, and family’s economic hardship. Using classification and regression tree analysis, we examined the moderating roles of these maternal factors in emotional distress with 513 Singaporean mothers of elementary school-age children on government financial scheme. The study affirmed that this low-resource population is not homogeneous in their perceived levels of distress and adaptive resources. These factors moderated mothers’ distress along different pathways. Parenting efficacy emerged as the most important predictor across different maternal distress levels. Perceived family hardiness behaved in a unique way, evident only with mothers who reported moderate–severe distress levels. Almost half the respondents reported normal–mild distress levels. Economic hardship did not emerge as a significant predictor. The findings reiterate the usefulness of attending to both situation-specific personal efficacy beliefs and trait-like family hardiness in their potential values to buffer mothers living under economic strain. Research and practice implications were identified.

Public Policy Relevance Statement

Not all mothers from low SES backgrounds and who are exposed to adversity develop lasting mental problems. Malleable internal assets and strengths can buffer maternal response to these stresses. This study examines the role of parental efficacy and family hardiness in moderating mothers’ capacity to handle emotional distress. We speculate that these maternal assets interact in different ways with economic hardship and child-related stress depending on their level of perceived distress. Parenting efficacy is the most important predictor across different maternal distress levels; while perceived family hardiness is evident only with mothers who reported moderate–severe distress levels. Economic hardship did not emerge as a significant predictor.

Esther Chor Leng Goh  <https://orcid.org/0000-0002-0235-2363>

The authors are grateful to the Ministry of Social and Family Development (MSF) in facilitating the collection of data for this article. MSF does not endorse the research project or its findings, methods, or results in any way, and any views, findings, or results arising from the research project in the publication or presentation are strictly the authors’ own.

This publication is funded by the Singapore Ministry of Education Social

Science Research Thematic Grant MOE-2016-SSRTG-039 to the Esther Chor Leng Goh. The authors would like to acknowledge the valuable contributions of Lee Chin Chew in reviewing a preliminary draft of the article. The authors have no known conflict of interest to disclose.

Correspondence concerning this article should be addressed to Esther Chor Leng Goh, Department of Social Work, National University of Singapore, AS3 Level 4, 3 Arts Link, Singapore 117570, Singapore. Email: esther_goh@nus.edu.sg

Stressful life experiences such as trauma, difficult life circumstances, challenging life transitions, or physical illness are important risk factors for the development of mental disorders (Kalisch et al., 2019). For families in economic hardship, these are further compounded by multiple life stressors that include poor housing, chronic unemployment or unstable employment, family violence, parental incarceration, and family members' physical or mental health issues (e.g., Anderson et al., 2014). Many of these homes are also disproportionately headed by women. Indeed, the associations between low family income, maternal distress, and child-related issues elucidating a host of familial and individual risk factors associated with poverty have been well-documented (Goodman et al., 2011). Yet, not all mothers exposed to such adversity develop lasting mental problems (Kalisch et al., 2019). Beyond these conventional risk markers, a related body of research highlighted the role of malleable internal assets and strengths that buffer maternal response to these stresses. However, the extent to which they moderate the impact of economic hardship on mothers who experience different levels of emotional distress is less fully explored and understood. This study seeks to bridge the gap by examining the role of two maternal assets—parental efficacy and family hardiness—in moderating mothers' capacity to handle emotional distress associated with the stress of living under low socioeconomic status (SES) conditions. Specifically, we speculate that these maternal assets interact in different ways with economic hardship and child-related stress that correspond with the degree to which mothers perceive their state of distress.

Maternal Mental Health

A recurrent observation in poverty research is the association between many of the attendant stress factors and the high incidence of maternal distress (Arditti et al., 2010). Such distress is characterized by negative affect, and depressive and/or anxious feelings. In a Singapore study, Chong et al. (2015) found reported poorer mental health condition by primary caregivers in low SES quarters compared to that of the typical population. Between 14% and 31% reported "severe" to "extremely severe" scores, measured with the Depression, Anxiety, and Stress Scale (Lovibond & Lovibond, 1995), above the reported national statistics of 10% for depressive and anxiety disorders in the country. Indeed, a growing body of evidence implicates maternal distress in an array of deleterious outcomes such as harsh parenting and developmental problems for children (Kotchick et al., 2005).

Association Between Maternal Mental Health and Child Development

A body of research has elucidated the relationships between poverty, maternal well-being, and child adjustment (Goodman et al., 2011; Noonan et al., 2018; Shek, 2005; Shek & Lin, 2014). Most importantly, it has identified maternal emotional well-being and parenting practices as two potential mechanisms through which low SES is associated with child mental health problems (Bøe et al., 2014). The cause and direction of these relationships are however not firmly established (Goodman et al., 2011). Furthermore, evidence has highlighted within-group variability in mothers' and children's responses to multiple risk exposure (Prellow & Loukas, 2003). Social relational theory (SRT; Kuczynski & De Mol, 2015),

for instance, posited that parents and children as equal agents but possess different levels of power, have inherent capacities to make sense of the environment, initiate change and resist domination by others. As such, although children may not be equal in power, it is plausible that their uncooperative behaviors can exacerbate or contribute to their mothers' distress. Indeed, a basic tenant of contemporary developmental psychology comes to recognize the child to be in a dynamic and active rather than passive relationship with experiences in the context of development (Sameroff, 2010).

Correspondingly, maternal perception of their children's behaviors can be a potential source of stress in shaping the quality of familial outcomes which in turn may impact their personal development and that of their children's well-being (Conners-Burrow et al., 2013). Taken together, the body of research is indicative of a bidirectional relationship between maternal mental health and child adjustment. However, one should not negate that differences in maternal internal resources can also be a buffer in that mothers in high-risk conditions who also experience high levels of protective factors function better than those with low levels of protective factors in similar circumstances (Kalisch et al., 2019; Wadsworth et al., 2013). We postulate that maternal adaptive capacities through perceived parenting efficacy and family hardiness provide buffers against two common distress sources in low SES households—mothers' perception of their children's emotional and behavioral problems, and the family's economic hardship. In the following sections, we review these constructs in their own conceptual homes and describe empirical findings conducted in relation to SES settings.

Parenting Efficacy

Among the parenting variables that have been identified to influence parental and child well-being, parenting self-efficacy (PSE) has emerged as a key explanatory factor that promotes healthy functioning for parents and their children. Situated in Bandura's (1997) social cognitive theory, PSE is the "expectation caregivers hold about their ability to parent successfully" (Jones & Prinz, 2005, p. 342). As a cognitive construct, it measures what parents believe they can do to influence their child's behavior and environment. Those who are efficacious may show higher tendency to use promotive parenting strategies, which in turn are more likely to support their children's success in the academic and social-psychological domains. Correspondingly, less efficacious parents who face difficulties using promotive parenting strategies may more likely give up when challenges mount. These parenting strategies consist of activities that foster children's skills, talents, and interests and that prevent negative parenting events and experiences (Ardelt & Eccles, 2001).

Indeed, substantial empirical evidence attests to PSE as a robust construct in relating to a range of parenting-related cognitions, practices, dispositions, and attributes; and a significant contributor to parent-child relationship, parental mental health, and child development and adjustment (Jones & Prinz, 2005). In a systematic review of PSE, Albanese et al. (2019) identified a wide range of associated outcomes on parent and child well-being to include the following: more effective parenting styles and behavior, promotive parenting practices, less coercive parenting, authoritative parenting, increased parenting skills, setting developmental goals for one's children, more effective child management strategies, and less

dysfunctional parenting. With families living in deprived conditions, Wadsworth et al. (2013) showed that efficacious parental coping in the face of economic strain can strengthen parental mental health and parent-child relationships, with effects on child internalizing and externalizing behaviors. Importantly, a body of research has emerged to highlight its potential function as a moderator, mediator, or as part of an interaction with other factors in predicting outcomes related to parent and child relationships (e.g., Heerman et al., 2017). It is therefore a key metric in understanding family functioning, coping and adjustment, and as a potential source of resiliency.

Family Hardiness

In times of facing and coping with chronic events, it helps to reestablish and support the well-being and functioning of the whole family system if family members stay hardy. Drawn from McCubbin et al.'s (1986) resiliency model of family stress, adjustment, and adaptation, family hardiness is posited to play a central role in the process of overall resilience. An appraisal of one's family hardiness reflects how well an individual believes one's family can withstand and manage challenging events in their lives (Weiss et al., 2013). Hardiness is therefore seen as a family characteristic, defined by a family's sense of control over life events and stressors, perception of change as beneficial, active orientation to adapting to stressors, and confidence that they can endure challenges. Family hardiness is the family's ability to work together, to remain cohesive as they struggle with stressors, and to find solutions to problems, as well as a key variable contributing to better family functioning (Pate & Pate, 2016).

Hardiness in individuals is a personality characteristic encompassing both cognitive and behavioral components, which acts as a stress resistance resource and has the potential to buffer the effects of stress on individuals. As such, hardy people are more effective in stressful situations as they cope more actively with these situations. They tend to use coping strategies aimed at turning the stressful situation into one that is more manageable, such as task-focused coping, and refrain from those that disengage them from the situation, such as emotion-focused coping or avoidance (Kobasa, 1979). The assessment of factors predicting family functioning, family relationships and the meaning that the family attributes to the stress factors can provide information to assist in identifying individuals and/or families in need of support and those that are hardy or resilient (Pate & Pate, 2016).

Family hardiness has been associated with anxiety and emotional well-being of parents' illness. Parents from families with a chronic illness reported lower family hardiness, more negative emotions, and lower satisfaction with life (Pate & Pate, 2016). However, some research shows that the relationship between family hardiness and well-being is not necessarily direct. Delahajj et al. (2010), for instance, found that coping self-efficacy mediated the relationship between hardiness and appraisal, whereas coping style mediated the relationship between hardiness and coping behavior in a longitudinal study involving military cadets under stressful training conditions. Other studies found hardiness to be a mediator in the relation between illness, stress, and strain as well as the quality of life and health of all family members. Illustratively, Weiss et al. (2013) examined perceived family hardiness, social support, and parent self-efficacy as predictors of family distress in 138 mothers of

individuals with autism spectrum disorder (ASD), aged between 4 and 41 years. Using a multiple mediation analysis, they found perceived self-efficacy and social support to mediate the link between accumulated stressors and perceived family hardiness, and that hardiness was a partial mediator in explaining how stressors were associated with family distress. The research highlighted the interrelationships between perceived social support and PSE in explaining an individual's perception of family hardiness, and how such perception is associated with less distress. However, compared to the body of research on social support and PSE, maternal perception of family hardiness has received far less interest in its contribution as a buffer in emotional distress to date. Where research exists, this has been with individuals and/or families living in atypical situations or conditions such as chronic health issues or with developmental delays or special needs (Raisanen, 2013). The extent to which it interacts with PSE and potential stress factors to buffer families in low-income homes is not well understood.

Economic Hardship

To reiterate, a body of research has built up to reveal the long reach of poverty on the psychological well-being of parents, particularly with mothers and in relation to maternal depression, and on specific coping styles (Aranda & Lincoln, 2011). Economic hardship therefore interferes and interrupts family processes of interactions, socialization processes, and consequently the adjustment of children in diverse ways. However, it is possible that not all families or individuals react to or perceive their experience of economic hardship to the same degree. Age, gender, and parenting practices can moderate the impact to bring about varying responses between individuals and families. Blom et al. (2019), for instance, found that although economic difficulties had a relatively universal effect on people's satisfaction with family life, financial hardship affected people's family life differently across European countries. In some countries, economic hardship affected the family more than in others. Accordingly, sociocognitive theories (e.g., Bandura, 1997) have posited personal beliefs, attitudes, and values to have the potential to influence and shape one's perception and response to a shared experience. Likewise, families experiencing the same impoverished environment may not necessarily respond in similar ways. In line with this proposition, we posit that mothers' perception of their economic hardship may interact with malleable personal assets to buffer distress.

Study Rationale

In sum, the research to date has confirmed the array of factors that contribute to maternal and child adjustment and adaptation to living in dire economic circumstances. The challenge remains for one to isolate the respective contribution of these experiences to mothers' state of well-being when these poverty-related forces impinging on their lives are dynamic and interactive in nature. Specifically, we highlighted the potential contribution of two maternal assets to the resiliency of mothers living under such conditions. To our knowledge, there are no studies about how perceived family hardiness, a trait-level personality construct, might be related to maternal perceived capability, particularly when self-efficacy, a domain-specific, state-based judgment of one's capabilities, is simultaneously

considered. Given the different theoretical underpinnings of the two constructs, we posit that hardiness might serve as a trait-like characteristic and self-efficacy a state-like characteristic that jointly explain how mothers are able to withstand the duress of living in economic hardship. In undertakings strewn with daunting obstacles as with living in low SES conditions, mothers may need both the staying power of their dispositions and efficacy beliefs in their capabilities to deal with daily contingencies that include managing the demands of parenting. In this study, we consider how these two hypothesized antecedents of maternal well-being are related, how they are distinct, and whether they might independently or jointly predict maternal emotional health.

To reiterate, this study sought to examine (a) individual- and family-related characteristics (perceptions of their parenting efficacy, hardiness, economic hardship, and child-related behaviors) of mothers who experience varying levels of maternal distress and (b) the extent to which maternal factors contribute uniquely and interactively to mothers' distress associated with the stress of living under low SES conditions. Specifically, it examines if there are variations among these predictors that differentiate mothers who perceived different distress levels. In this respect, the classification and regression tree analysis (CART) is an ideal statistical mining tool to unearth ways that maternal characteristics interact to regulate emotional distress. Details about CART will be elaborated in a later section.

Method

Participants

Five hundred and thirteen mother–child dyads were recruited for this study conducted in Singapore. Data collection was conducted between June and August 2019. The study recruited mother–child dyads whose (a) families were receiving government financial aid at the time of recruitment or had previously received government financial aid between 2016 and 2018 and (b) who had a child between 7 and 12 years. This study consisted of 86 participants of Chinese descent, 318 Malays, 78 Indians, and 31 from other minority groups and reflected the dominant ethnic groups in Singapore. There were 246 boys and 267 girls.

Procedure

Invitation letters were sent to financial assistance recipients who met the sampling criteria. Follow-up calls were made to invite their participation. Low-income mothers were contacted to select one child for the interview if they had multiple children between 7 and

12 years of age. Interviews were conducted at the participants' homes. Parental informed consent and child assent were obtained. The interviews took about 1 hr to complete. Each participating family received a monetary token of U.S. dollars 45 upon completion of the interview. The study was approved by the University institutional review board (National University of Singapore [NUS]-IRB reference code S-18-003).

Majority of the interviewers were trained social workers, current social work students, or adults with experience in early childhood education or in human services. All attended a full day training prior to data collection to familiarize with the process of building rapport with the families and the administration of the measures.

The original measures in English were translated into the other official languages of Singapore, namely Malay, Chinese and Tamil, by professional translators. These measures were forward and back translated and the translations were checked for accuracy. Where measures contained preexisting official translations, these were utilized. Participants were contacted before the interview to state their language preference. Interviewers who were proficient in the language selected by the mother, then administered the interview.

Preliminary screening showed satisfactory normality and linearity of the variables. Table 1 shows descriptive statistics of the respective measures. On the participants' demographics, mothers' background variables indicated that their mean age was 37.6 years; with 65% married and 22% divorced; and 30% completed elementary school education and 23% a 5-year high school education. Sixty percent of the households reported one income earner; 69% have between 2 and 4 children of average age of 10 years and ranging from 7 to 12 years.

Measures

The outcome variable is maternal distress and measured with:

Depression Anxiety and Stress Scale 21. Depression Anxiety and Stress Scale 21 (DASS-21; Lovibond & Lovibond, 1995) is a self-reporting questionnaire designed to measure emotional distress in three subcategories—depression (e.g., loss of self-esteem/incentives and depressed mood), anxiety (e.g., fear and anticipation of negative events), and stress (e.g., persistent state of overarousal and low frustration tolerance). It consists of 21 items with seven in each category based on a 4-point Likert scale. Participants rated how many of each of the statements applied to them over the past week, from *did not apply to me at all* (0) to *applied to me very much, or most of the time* (3). Higher score corresponds with greater severity of the emotional distress. Cronbach's α was .94 in this sample.

Table 1
Descriptive Statistics and Reliability

Scales	<i>M (SD)</i>	Skewness	Kurtosis	Minimum	Maximum	Cronbach's α
DASS	35.79 (27.17)	.81	.04	0	120	.94
PSOC	67.06 (10.21)	.16	.09	38	98	.74
FHI	51.69 (8.30)	-.59	.88	12	68	.82
CBCL	31.65 (23.70)	1.19	1.88	0	141	.95
EHQ	14.71 (6.10)	.05	-.44	0	30	.81

Note. $N = 513$. DASS = Depression, Anxiety, and Stress Scale; PSOC = Parenting Sense of Competence; FHI = Family Hardiness Index; CBCL = Child Behavior Checklist; EQH = Economic Hardship Questionnaire.

The predictors are as follows:

Sociodemographic Data. Demographic information about mother's marital status, maternal education, and the number of children in the household.

Parenting Sense of Competence Scale. Parenting Sense of Competence Scale (PSOC; Gilmore & Cuskelly, 2009) is a 17-item scale designed to measure parents' satisfaction with parenting and their efficacy in the parenting role, and consists of two subscales: Satisfaction and Efficacy. It is based on a 6-point Likert scale from *strongly disagree* (1) to *strongly agree* (6); higher scores indicate greater satisfaction and greater efficacy with the parenting role. The α coefficients from a Singapore study in a parenting program for those with children having behavioral problems for the Satisfaction and Efficacy subscales are .80 and .73, respectively (Yap et al., 2014). Cronbach's α was .74 in this sample.

Family Hardiness Index. Family hardiness index (FHI; McCubbin et al., 1986) is a 20-item self-report instrument that assesses three characteristics of hardiness: commitment, challenge, and control. Family commitment is the family's sense of internal strengths, dependability and ability to work together; family challenge assesses the family's ability to be resourceful, embrace new ideas and assimilate them into their existing schemata; and control measures the family's sense of being in control of family life rather than being conditioned by external events and circumstances. Participants report the degree to which a series of statements describe the family at that time using a 4-point Likert scale, ranging through *false* (0), *mostly false* (1), *mostly true* (2), and *true* (3). Total score is derived by summing the value of all responses. Higher scores indicate greater perceived hardiness. Cronbach's α was .82 in this sample.

Economic Hardship Questionnaire. Economic Hardship Questionnaire (EHQ; Lempers et al., 1989) assesses the number of economic hardships the family felt and the adjustments they have had to make in order to make ends meet. Questions were completed on a 4-point Likert scale indicating how often each of 11 items was true for them in the last 6 months, from *never* (0), *sometimes* (1), *often* (2) to *very often* (3). Higher scores are indicative of more stress. Cronbach's α was .81 in this sample.

Child Behavior Checklist. Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2001) for ages 6–18 is a 118-item parent report form that describes the child's behavioral, emotional, and social problems over the past 6 months. The items were rated on a 3-point Likert scale: *not true* (0), *somewhat or sometimes true* (1), and *very true or often true* (2). Mothers completed the checklist to assess their perceptions of children's emotional and behavioral problems. By summing the scores, eight syndromes (withdrawn, somatic complaints, anxious/depressed, social problems, thought problems, attention problems, delinquent behavior, aggressive behavior), two syndrome groups (internalizing and externalizing problems), and a total problems score, can be computed. Internalizing problems include withdrawn behavior, somatic complaints, anxiety, and depression, while externalizing problems include aggressive and delinquent behavior. The total problems score was used as it is the best estimate of overall

maladjustment. A higher score reflects a higher severity. Cronbach's α was .95 in this sample.

Data Analysis

Classification and Regression Tree Analysis. To address the primary research intent of this study, a recursive partitioning model approach—CART was used with SPSS Version 27. This is a classification tree technique known to be applicable in developing predictive models across different fields of study (Rokach & Maimon, 2008). CART resembles latent profile analysis (LPA) in that these statistical techniques have the function of data reduction. The difference lies in that LPA detects similarities between individuals or cases based on the predictors, which it clusters together according to those with common characteristics and which differentiate them from other clusters. CART, on the other hand, classifies relationships between the outcome variable and predictor variables as they manifest differentially among groups of cases (Ma, 2018). It does so by partitioning a heterogeneous data set into smaller homogenous groups regarding the outcome variable categories, with increasing differences in the values of the outcome variable between each group. The classification is organized into a tree-like structure, beginning with the root node which is the outcome variable and consists of all the observed data of the sample that is to be split into certain classes in the process of tree building. In CART terminology, the node at the top of the tree is the root node, and the tree partitions to consequent nodes termed child nodes. The producing node is the parent node. This splitting of the nodes continues until the child node cannot be split further, and it becomes a terminal node.

The first level of branches and nodes represents the predictor that has the strongest relation with the outcome variable. Unlike multiple regression techniques, the importance of the predictor (expressed in the strength of the relationship between the outcome variable and a predictor) is not necessarily in the order in which the predictors appear in the CART tree. CART looks for a predictor that can produce two child nodes that have as much homogeneity in the outcome variable as possible *within* each child node and as much heterogeneity in the outcome variable as possible *between* the child nodes, being determined by a statistical criterion called the impurity measure. It also allows a predictor to appear more than once in any tree branch to capture complex relationships between the outcome variable and this predictor.

Being a nonparametric technique, CART makes no assumptions about the functional form of the model linking the outcome variable and predictors, nor the distributions of the variables themselves, and can handle continuous, ordinal, and nominal predictors. It provides a logical approach for data analysis lacking theoretical insights and empirical studies seeking to uncover how individual-level characteristics interactively affect an outcome by statistically clustering individuals into a number of mutually exclusive and exhaustive groups with markedly different outcome measures (Ma, 2018). As an exploratory data analysis technique, CART can also flexibly uncover latent patterns of relations in the data where existing theoretical frameworks could not offer sufficient guidance to identify complex interactive relations among predictors. It therefore helps to set the foundation for further theoretical development (Ma, 2018). In this study, we utilized CART to segment populations into

subgroups that share similar characteristics (i.e., maternal distress) and highlight the specific needs of the high-risk subgroups as opposed to the average need of all high-risk families (Sledjeski et al., 2008). It is a highly flexible tool for decomposing complex interactions among predictors to identify interaction effects or local interactions (Ma, 2005, 2018).

Results

All the bivariate correlations among the variables of interest were statistically significant and in the expected directions (Table 2), with a low to moderate range ($r = 0.195\text{--}0.550$). Specifically, higher maternal distress was associated with lower scores on parenting efficacy and family hardiness, and higher scores on economic hardship and child-related problems.

The three categorical variables of maternal marital status, education, and the number of children together with the four measures were entered simultaneously as predictors into the model. The CART tree grew to three levels to maintain a minimum size of 50 mothers for the terminal nodes. The risk estimate of misclassification was 1.23 ($SE = .09$). Cross validation was carried to ascertain data stability and to prevent overfitting. The three levels of the tree are retained, as the subtree that yielded the lowest error rate of 1.39 ($SE = .10$), approximates that for the original tree. Pruning reduced the tree to two levels with risk estimate of 1.30 ($SE = .09$), and removed critical information on Nodes 7–10 about mothers in the moderate–severe range of distress. As such, we decided to retain the original tree.

Figure 1 shows the CART analysis that partitioned mothers into nodes with different levels of emotional distress according to the largest reduction in impurity from the root node (0). The tree grew to three levels to reveal that maternal distress can be predicted by three predictors. The root node contained 513 mothers, with an obtained average score of 35.79 ($SD = 27.17$) on maternal distress. The first partition occurred in relation to parenting efficacy ($M = 67.06$, $SD = 10.21$), indicating this parent attribute to be the best or biggest impurity reduction of all the predictors. The parenting efficacy split was at the score of 66.5. The left child node (Node 1) contained 52% mothers who obtained a parenting efficacy score of equal or below 66.5 and maternal distress mean score of 48.54 ($SD = 27.2$). The right child node (Node 2) contained 48% mothers with a parenting efficacy score of above 66.5 and a maternal distress mean score of 21.85 ($SD = 19.13$).

The mothers in Node 1 were further split according to their perceived level of family hardiness ($M = 51.2$, $SD = 8.30$). This

yielded a left node (Node 3) comprising 18% mothers with family hardiness score of 45.5 and below, and a right node (Node 4) consisting of 35% mothers with family hardiness score of above 45.5. Node 3 became a terminal node. Node 4 was further partitioned according to perceived level of child-related problem score ($M = 31.65$, $SD = 23.70$). Node 7 consisted of 19% mothers who reported score of 36.5 and below on child-related problems; node 8 comprised 16% mothers who reported above 36.5 in child-related problem score. These two nodes became terminal nodes.

Mothers on the right node (Node 2) were further split according to reported child-related problem score. Node 5 consisted of 34% mothers who reported child-related problem score of 31.5 and below; and Node 6 were made up of 14% mothers who reported score above 31.5. Node 6 became a terminal node. Node 5 was again split on parenting efficacy in which a score of 73.5 and below constituted Node 9 (14% mothers); 20% mothers reported a score of above 73.5, and they made up Node 10. Both nodes became terminal nodes.

Description of Maternal Characteristics in the Terminal Nodes

CART made a binary split with parenting efficacy as the first variable to split the root node (maternal distress), implying its absolute importance as a predictor. Its effect is however best appreciated in interaction with the other predictors. Conventionally, the maternal distress mean score in a particular terminal node is often compared with its average mean score in the root node.

Node 10 described mothers who reported lowest levels of distress ($M = 13.39$, $SD = 15.40$) and highest levels of parenting efficacy (73.6 points and above). They accounted for 20% of the sample. On the other extreme, Node 3 is characterized by mothers who reported highest levels of distress that placed them at the severe range of the DASS scale (Lovibond & Lovibond, 1995). They also reported lowest scores on both parenting efficacy and family hardiness. This terminal node made up 17% of the sample. Of interest is a comparison between terminal Nodes 6 and 7 which shared some common characteristics. Both groups consisted of mothers with comparable levels of distress ($X = 33.9$). Node 7 described 19% of the mothers who reported lower parenting efficacy, family hardiness of above 45.5, and above average child-related problem score of 36.5. On the other hand, Node 6 is characterized by 14% of mothers who reported parenting efficacy and child-related problems levels that were above their respective means. This comparison suggests that for those mothers who reported lower parenting efficacy but higher child-related problems scores (Node 7), family hardiness is seen as a buffer to support.

A significant finding of important highlight is the gain summary of the nodes (Table 3). Terminal Nodes 3, 8, and 7 emerged as the best three nodes in predicting mothers who reported low distress. Node 3 characterized a group of mothers whose mean distress score is elevated ($X = 64.5$) and family hardiness score of below 45.5. Most are likely to be experiencing mental health issues. This condition is reported by 17% of the mothers. Node 8 represented 16% of the mothers who reported the second lowest distress scores after Node 3. This node indicated maternal mental health concerns if the mean distress score is about 49 but family hardiness score is 45.5 and above. However, this subpopulation of mothers also reported the highest range of child-related problems with scores of more than

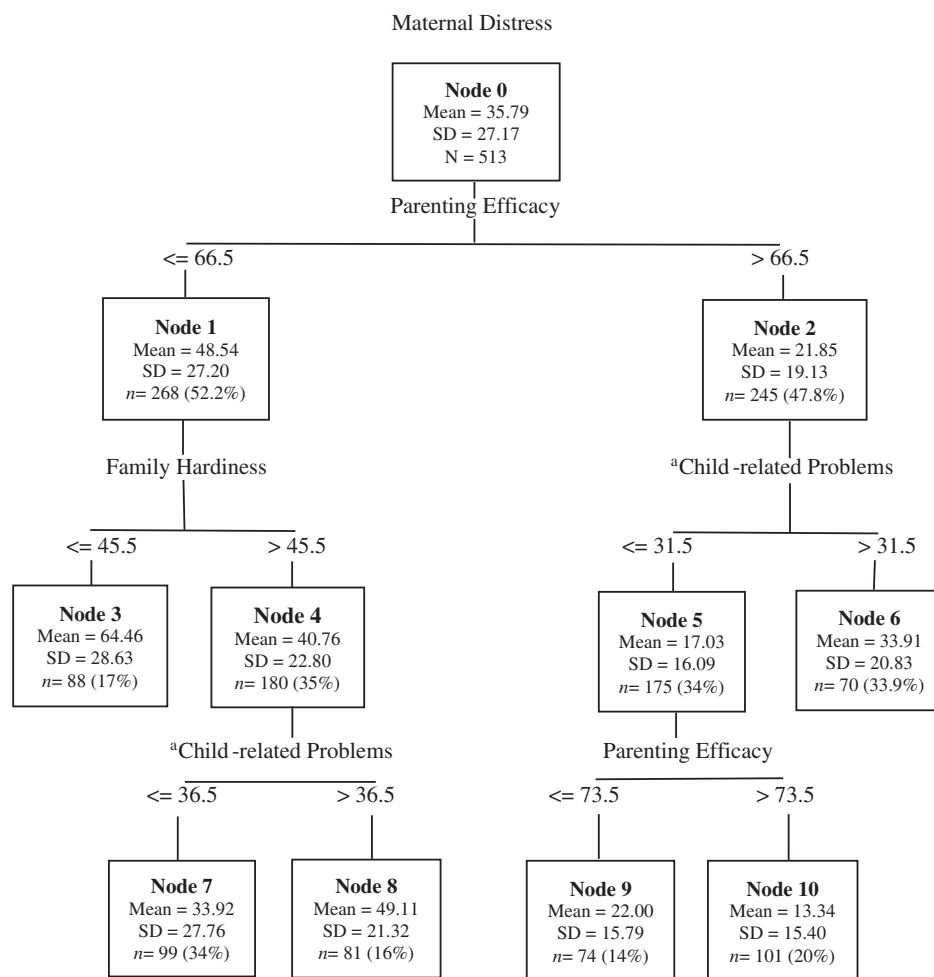
Table 2
Correlations Among Variables of Interest

Scale	DASS	PSOC	FHI	CBCL	EHQ
DASS	—	-.55**	-.48**	.51**	.26**
PSOC		—	.49**	-.38**	-.20**
FHI			—	-.35**	-.25**
CBCL				—	.22**
EHQ					—

Note. $N = 513$. DASS = Depression, Anxiety, and Stress Scale; PSOC = Parenting Sense of Competence; FHI = Family Hardiness Index; CBCL = Child Behavior Checklist; EQH = Economic Hardship Questionnaire.

** $p < .01$.

Figure 1
Regression Tree for Maternal Distress



^a Child-related problems refers to child emotional and behavioral problems.

36.5, compared to all other groups. Finally, Node 7 described 19% of the mothers who reported a similar level of family hardness as Node 8, a slightly elevated mean distress score but reported child-related problem score was less than 36.5. This node indicated maternal mental health concerns that may not be of the same magnitude as those in Nodes 3 and 8.

Table 3
Gains Summary for Terminal Nodes

Node	N	Percent	Predicted mean (DASS)
3	88	17.2	64.46
8	81	15.8	49.11
7	99	19.3	33.92
6	70	13.6	33.91
9	74	14.4	22.00
10	101	19.7	12.38

Note. Gains are the number of cases in each terminal node in the target category to represent the best classification predictions for the model. DASS = Depression Anxiety, and Stress Scale.

Overall, there was a clear multivariate pattern indicating variation in the predictive roles of different promotive factors as a function of maternal mental health. It suggested that for mothers who reported the highest distress scores, perceived parenting efficacy, family hardness, and child-related problems offered the best combination of prediction. For mothers with the lowest range of distress scores, parenting efficacy and child-related problems were the most salient predictors. Both were particularly successful predictors in that they were able to partition mothers' distress two times across the three levels of the tree. Mother-perceived child-related problems dominated the second and third levels while parenting efficacy was the absolute first level and third level of the tree for the group of mothers who reported low distress and parenting efficacy score of 73.5 or lower. Noticeably, family hardness emerged as a predictor only with the group of mothers with moderate-severe range of distress scores. Perceived economic hardship did not emerge as a predictor.

The CART tree accounted for about 40% of the variance in maternal distress. To appraise the importance of a predictor to the prediction model, CART calculated a variable importance score by looking at the improvement measure attributable to each variable in

Table 4
Predictors of Maternal Distress

Predictors	Importance	Normalized importance (%)
PSOC	216.05	100
CBCL	209.67	97
FHI	151.80	70.3
EHQ	62.96	29.1
Number of children	8.18	3.8
Marital status	7.13	3.3
Maternal education	6.751	3.2

Note. Values of improvements are summed over each node and scaled relative to the best performing variable. The variable with the highest sum of improvements is scored 100, and all other variables will have lower scores ranging downward toward zero. PSOC = Parenting Sense of Competence; CBCL = Child Behavior Checklist; FHI = Family Hardiness Index; EQH = Economic Hardship Questionnaire.

its role in the primary split. The values of these improvements are summed over each node and are scaled relative to the best performing variable. The variable with the highest sum of improvements is scored 100, and all other variables will have lower scores ranging downward toward zero. With respect to this analysis, parenting efficacy scored 100%, child-related problems 97%, family hardiness 70%, and economic hardship 29%. The three maternal demographic factors contributed between 3% and 4% to the model (Table 4).

Discussion

Substantial empirical evidence has highlighted the relationship between attendant stresses of living in poverty and the high incidence of maternal distress, indicating that socioeconomic disadvantage has a strong and potentially causal influence on parenting by exacerbating the effect of poor mental health on maternal and child behaviors. Such risk factors should not preclude families as possessing assets and strengths, or from engaging in positive parenting behaviors (e.g., *Arditti et al., 2010*). We reason that in undertakings strewn with daunting obstacles in low SES households, mothers need both the staying power of their dispositions and efficacy beliefs in their capabilities to maintain their state of well-being. Accordingly, we examined the moderating roles of perceived parental efficacy, family hardiness, economic hardship and child behaviors in maternal distress. We found that mothers facing economic hardships and deprivation need not necessarily share similar experiences and internal psychological resources. Indeed, the CART analysis revealed that maternal factors influence mothers' distress in a way that is not linear but along different pathways.

Overall, the analysis indicated three predictors to be associated with maternal emotional state. First, perceived parental efficacy emerged as the most important and best predictor of maternal distress across varying levels, indicating that it has a pervasive impact across different levels of maternal state of well-being. Parenting efficacy has been known to be a robust construct in relating to a range of parenting-related cognitions, practices, dispositions, and attributes, and this finding resonates with the literature that is largely situated within a western propositional framework (*Jones & Prinz, 2005*). This finding renders an Asian perspective to extend its cross-cultural applicability. However, its absolute importance is best appreciated in its interactions with other variables.

Differing patterns after the most significant split at the first level of prediction were observed, depending on the level of reported maternal distress. Localized impact emerged at second and third levels of the tree. Perceived family hardiness behaved in a unique way, appearing once and only with mothers reporting a high level of distress. Specifically, mothers who reported a lower score on parental efficacy demonstrated a higher level of perceived family hardiness. Of important highlight is that the CART analysis identified a subpopulation of mothers with perceived moderate–severe range of distress, suggesting that about one in two in the population of low SES mothers are in need of interventions or treatments. Correspondingly, the other half of the subpopulation reported normal–mild levels of maternal distress. For this group of mothers, parental efficacy continued to be of importance but this interacted with reported child-related problems. That is, for these mothers, perceived child difficulties become a more salient influence. However, for a third of the mothers who obtained about the lowest mean scores on maternal distress but also reported child-related issues, it appears that they thrive on stronger perceived parenting efficacy for support (Node 5).

In terms of their predictive ability, parenting efficacy and family hardiness are however distinct in their level of specificity. The predictive utility of self-efficacy is specific to the situation at hand and the context sensitivity of efficacy beliefs is one reason why they consistently predict target outcome (*Bandura, 1997*). On the other hand, trait-like attributes such as family hardiness might be essential to success no matter what the domain. In this study, both psychological factors have shown to relate to maternal distress and mothers' capacity to handle stress. The findings suggest that mothers who perceived to be hardy will not necessarily do so unless they also see themselves as efficaciously capable. Correspondingly, mothers are better able to buffer themselves against poor well-being if they already perceived themselves to be highly efficacious in parenting and may be less likely to succumb to the vulnerabilities imposed by economic hardship. From a research standpoint, this finding on family hardiness extends the small body of research with atypical populations to underscore its utility as an operable construct to understand resiliency in low-resource populations. Further, the findings reiterate the usefulness of attending to both situation-specific personal efficacy beliefs and trait-like family hardiness in examining their potential values to buffer mothers living under economic strain. However, it is important to note that their respective utility would be better tapped if we are cognizant of their interplay with varying levels of perceived distress.

Lastly, we noted that at the second and third levels of the tree, perceived child-related challenges began to emerge as an issue with specific groups of mothers with low–moderate levels of parental efficacy. Indeed, perceived child-related stress is a particularly successful predictor in that it was able to partition mothers three times in the tree. It is the most important predictor but this importance did not emerge until lower levels of the tree. Of note is that the child-related problems mean score of 31.65 reflected a higher prevalence of mother-reported child emotional and behavior challenges compared to the Singapore mean of 22.89 (*Ang et al., 2012*). This suggests that mothers living in low economic conditions are also likely to perceive or experience higher levels of child-related distress compared to a typical population. With the group of mothers who reported highest level of parenting efficacy and lowest maternal distress scores, parenting efficacy remains the single salient predictor of maternal emotional health. Noticeably, absent from the tree is

the contribution of mothers' perceived economic hardship to maternal distress, indicating that it is not a significant predictor.

In sum, the study reveals a discernible pattern in the way maternal protective factors provide affordances to support mothers living with distress in low SES households. It highlights that these factors are not conceptually neat, linear or tightly associated but in fact they provide distinct contributions to the prediction model as a function of the mothers' perceived stress levels. Importantly too is that the CART analysis reveals and affirms that this low-resource population is not homogeneous in maternal distress and internal resources. That is, not all mothers living in abject poverty perceived or experienced poor mental health. Although it is possible that these maternal assets contribute to their positive state of mental well-being, the cross-sectional nature of this study cannot attribute a direct causal relationship between these variables. Further research that examines how the interplay between these variables of interest accumulatively shapes the development of maternal distress would be instructive to inform if they have enduring qualities that can support individuals to withstand the pressures of low SES living over the course of time.

Implications

Findings in this study carry several implications. First, it affords us the opportunity to profile mothers who experience varying levels of emotional distress to reveal the differing propensities to cope with exigencies associated with their economic status. The identification of these positive elements that contribute to their resilience allows for a broader understanding of the complex processes and mechanisms that buffer the impact of chronic stressors on mothers in these low SES households. They can help to disrupt the path from risk to negative outcomes and enable mothers to overcome the deleterious consequences of risks. They are therefore important predictors of positive outcomes under both low-risk and high-risk conditions; the identification of these promotive factors should be a key clinical research imperative (Hostinar & Miller, 2019).

Second, in respect to designing parenting programs, the findings reiterate the need to move away from a "deficit in functioning" model to one that cultivates parental efficacy and hardiness in a low SES setting. For instance, efficacy research has shown that facilitating change requires more than building and strengthening skill sets. PSE is highly modifiable and programs structured around providing parents with successful parenting experiences and generating positive feelings of capability can enhance adaptive parenting practices and are likely to go a long way to buffer families against negative well-being outcomes as already evidenced in research (Chong & Kua, 2017). Parenting interventions that aim to foster these parents' coping without also strengthening their beliefs in their own parenting capabilities will not likely ensure sustainability in core target competencies (Heerman et al., 2017). Understandably, strengthening psychological capacities to enable more effective coping is probably not likely to alter a family's economic situation significantly (Wadsworth, 2012). Nonetheless, having the perceived ability to cope efficaciously and to be hardy could prevent or combat the development of depression and other psychological problems that interfere with success in living with daily hassles perpetuated by economic constraints. Additionally, improving parenting coping skills by attending to these self-beliefs are well-documented mechanisms in decreasing child internalizing and externalizing problems (e.g., Ardelt & Eccles, 2001; Chong & Kua, 2017).

Third, the CART analysis points to the need for a differentiated parenting training model for parents who experience or perceive different levels of emotional distress. Indeed, not all can profit from a "one-size-fits-all" or generalized training approach for mothers living in low SES conditions and experiencing parenting challenges. Needs assessment and evaluation should begin with clinicians paying more attention to maternal psychological factors that yield pertinent information about the mothers' state of mental health. That is, those with low parenting confidence and family hardiness are likely to be most at risk of serious mental health issues (Node 3) and should therefore be accorded early intervention and priority support services.

Finally, related research in identity-based motivation with school children from low SES homes has shown that when their positive identities are primed, there is real promise for impacting school performance, improved grades and attaining possible identities of school success and college entry (Oyserman et al., 2006). Since identity salience can have powerful influences on behavior, it may have potentially high-leverage applications in program design if these concepts are extended to parenting programs that aim to foster and create positive and future identities as individuals and a parent. These identities can be made salient when focus is placed on generating mothers' efficacy and hardiness in the face of multiple challenges. Moving forward, an important research agenda is to design interventions that would leverage on strategies to create alternate identities about one's capacity to cope effectively with socioeconomic disadvantage.

Limitations

The findings from this study should be viewed in the light of several limitations. First, the cross-sectional design poses some restrictions on the conclusions that can be drawn. That is, we cannot infer any causality in the relationships between the variables of interest although it does not preclude this possibility. We also recognize that self-report has constraints in reflecting the accurate extent of the mothers' perceptions of the factors explored that could present the problem of common method biases and the potential influence these have on research results (Podsakoff et al., 2003). Additionally, the CART analysis is, at best, able to offer a prediction model with 40% probability, indicating the presence of untapped factors that may be either enablers or barriers to maternal mental health. Second, as a data mining technique, CART strives on huge sample sizes but the sample in this study is modest. It would be most appropriate to confirm present findings by using this methodology with larger samples to strengthen validation. Finally, as this study established the role of specific psychological factors that predict distress in mothers with elementary school-age children, we are unclear if the nature of these relationships holds for older children (Noonan et al., 2018). Broadening the diversity of populations, specifically with mothers of adolescents and of different ethnicities or cultures, would afford further insight to uncover if patterns of change in the interactions between these promotive factors are distinctively different with groups. This information has important utility in the design and implementation of family-focused programs aimed at meeting changing demands and needs of families.

Conclusion

An alternate paradigm shift needs to emerge in the way we build our conceptual models with features that are both strength-based and

family-enhancing, as well as is culturally relevant to the contextual demands that may differ from contemporary western-derived models. In this respect, the CART analysis has afforded a flexible tool for decomposing complex interactions among predictors and to identify interaction effects or local interactions by segmenting a seemingly homogeneous low SES population into subgroups that share similar characteristics. This highlight the specific needs of the different high-risk subgroups as opposed to the average need of all high-risk families, allowing us to be better focused in addressing intervention needs and clinical care designed to support healthy family and child growth.

Keywords: maternal emotional distress, parenting efficacy, family hardness, economic hardship, CART analysis

References

- Achenbach, T. M., & Rescorla, L. A. (2001). *Manual for the ASEBA school-age forms & profiles*. University of Vermont, Research Centre for Children Youth, and Families.
- Albanese, A. M., Russo, G. R., & Geller, P. A. (2019). The role of parental self-efficacy in parent and child well-being: A systematic review of associated outcomes. *Child: Care, Health and Development*, 45(3), 333–363. <https://doi.org/10.1111/cch.12661>
- Anderson, S., Leventhal, T., & Dup  r  , V. (2014). Exposure to neighbourhood affluence and poverty in childhood and adolescence and academic achievement and behaviour. *Applied Developmental Science*, 18(3), 123–138. <https://doi.org/10.1080/10888691.2014.924355>
- Ang, R. P., Rescorla, L. A., Achenbach, T. M., Ooi, Y. P., Fung, D. S. S., & Woo, B. (2012). Examining the criterion validity of CBCL and TRF problem scales and items in a large Singapore sample. *Child Psychiatry and Human Development*, 43(1), 70–86. <https://doi.org/10.1007/s10578-011-0253-2>
- Aranda, M. P., & Lincoln, K. D. (2011). Financial strain, negative interaction, coping styles and mental health among low-income Latinos. *Race and Social Problems*, 3(4), 280–297. <https://doi.org/10.1007/s12552-011-9060-4>
- Ardelt, M., & Eccles, J. S. (2001). Effects of mothers' parental efficacy beliefs and promotive parenting strategies on inner-city youth. *Journal of Family Issues*, 22(8), 944–972. <https://doi.org/10.1177/019251301022008001>
- Arditti, J., Burton, L., & Neeves-Botelho, S. (2010). Maternal distress and parenting in the context of cumulative disadvantage. *Family Process*, 49(2), 142–164. <https://doi.org/10.1111/j.1545-5300.2010.01315.x>
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. W. H. Freeman.
- Blom, N., Kraaykamp, G., & Verbakel, E. (2019). Current and expected economic hardship and satisfaction with family life in Europe. *Journal of Family Issues*, 40(1), 3–32. <https://doi.org/10.1177/0192513X18802328>
- B  e, T., Sivertsen, B., Heiervang, E., Goodman, R., Lundervold, A. J., & Hysing, M. (2014). Socioeconomic status and child mental health: The role of parental emotional well-being and parenting practices. *Journal of Abnormal Child Psychology*, 42(5), 705–715. <https://doi.org/10.1007/s10802-013-9818-9>
- Chong, W. H., Choo, H., Goh, E. C. L., Wee, P. Y., Goh, W. H., & Chay, O. M. (2015). Preventive child healthcare in Singapore: A parents' well-being perspective. *Annals of the Academy of Medicine, Singapore*, 44(12), 550–553.
- Chong, W. H., & Kua, S. M. (2017). Parenting self-efficacy beliefs in parents of children with autism: Perspectives from Singapore. *American Journal of Orthopsychiatry*, 87(3), 365–375. <https://doi.org/10.1037/ort0000169>
- Conners-Burrow, N. A., Fussell, J. J., Johnson, D. L., McKelvey, L. M., Whiteside-Mansell, L., Bokony, P., & Kralei, S. (2013). Maternal low- and high-depressive symptoms and safety concerns for low-income preschool children. *Clinical Pediatrics*, 52(2), 171–177. <https://doi.org/10.1177/0009922812473776>
- Delahaij, R., Gaillard, A. W. K., & van Dam, K. (2010). Hardiness and the response to stressful situations: Investigating the mediating processes. *Personality and Individual Differences*, 49(5), 386–390. <https://doi.org/10.1016/j.paid.2010.04.002>
- Gilmore, L., & Cuskelly, M. (2009). Factor structure of the Parenting Sense of Competence scale using a normative sample. *Child: Care, Health and Development*, 35(1), 48–55. <https://doi.org/10.1111/j.1365-2214.2008.00867.x>
- Goodman, S. H., Rouse, M. H., Connell, A. M., Broth, M. R., Hall, C. M., & Heyward, D. (2011). Maternal depression and child psychopathology: A meta-analytic review. *Clinical Child and Family Psychology Review*, 14(1), 1–27. <https://doi.org/10.1007/s10567-010-0080-1>
- Heerman, W. J., Taylor, J. L., Wallston, K. A., & Barkin, S. L. (2017). Parenting self-efficacy, parent depression, and healthy childhood behaviors in a low-income minority population: A cross-sectional analysis. *Maternal and Child Health Journal*, 21(5), 1156–1165. <https://doi.org/10.1007/s10995-016-2214-7>
- Hostinar, C. E., & Miller, G. E. (2019). Protective factors for youth confronting economic hardship: Current challenges and future avenues in resilience research. *American Psychologist*, 74(6), 641–652. <https://doi.org/10.1037/amp0000520>
- Jones, T. L., & Prinz, R. J. (2005). Potential roles of parental self-efficacy in parent and child adjustment: A review. *Clinical Psychology Review*, 25(3), 341–363. <https://doi.org/10.1016/j.cpr.2004.12.004>
- Kalisch, R., Cramer, A. O. J., Binder, H., Fritz, J., Leertouwer, I., Lunansky, G., Meyer, B., Timmer, J., Veer, I. M., & van Harmelen, A. L. (2019). Deconstructing and reconstructing resilience: A dynamic network approach. *Perspectives on Psychological Science*, 14(5), 765–777. <https://doi.org/10.1177/1745691619855637>
- Kobasa, S. C. (1979). Stressful life events, personality, and health: An inquiry into hardiness. *Journal of Personality and Social Psychology*, 37(1), 1–11. <https://doi.org/10.1037/0022-3514.37.1.1>
- Kotchick, B. A., Dorsey, S., & Heller, L. (2005). Predictors of parenting among African American single mothers: Personal and contextual factors. *Journal of Marriage and Family*, 67(2), 448–460. <https://doi.org/10.1111/j.0022-2445.2005.00127.x>
- Kuczynski, L., & De Mol, J. (2015). Dialectical models of socialization. In R. M. Lerner, W. F. Overton, & P. C. Molenaar (Eds.), *Handbook of child psychology and developmental science* (7th ed., pp. 323–368). Wiley. <https://doi.org/10.1002/9781118963418.childpsy109>
- Lempers, J. D., Clark-Lempers, D., & Simons, R. L. (1989). Economic hardship, parenting, and distress in adolescence. *Child Development*, 60(1), 25–39. <https://doi.org/10.2307/1131068>
- Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy*, 33(3), 335–343. [https://doi.org/10.1016/0005-7967\(94\)00075-U](https://doi.org/10.1016/0005-7967(94)00075-U)
- Ma, X. (2005). Growth in mathematics achievement: Analysis with classification and regression trees. *Journal of Educational Research*, 99(2), 78–86. <https://doi.org/10.3200/JOER.99.2.78-86>
- Ma, X. (2018). *Using classification and regression trees: A practical primer*. Information Age Publishing.
- McCubbin, M., McCubbin, H., & Thompson, A. (1986). FHI: Family hardiness index. In H. McCubbin & A. Thompson (Eds.), *Family assessment inventories for research and practice* (pp. 124–130). University of Wisconsin System Press.
- Noonan, K., Burns, R., & Violato, M. (2018). Family income, maternal psychological distress and child socio-emotional behaviour: Longitudinal findings from the UK Millennium Cohort Study. *SSM Population Health*, 4, 280–290. <https://doi.org/10.1016/j.ssmph.2018.03.002>
- Oyserman, D., Bybee, D., & Terry, K. (2006). Possible selves and academic outcomes: How and when possible selves impel action. *Journal of*

- Personality and Social Psychology*, 91(1), 188–204. <https://doi.org/10.1037/0022-3514.91.1.188>
- Pate, T., & Pate, M. (2016). Family hardiness, anxiety, and subjective well-being in families with and without a chronic illness. In J. Stala & J. Garmaz (Eds.), *Strengthening families* (pp. 123–135). Krakow Press. <https://doi.org/10.15633/9788374385640.09>
- Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879–903. <https://doi.org/10.1037/0021-9010.88.5.879>
- Prelew, H. M., & Loukas, A. (2003). The role of resources, protective, and risk factors on academic achievement-related outcomes of economically disadvantaged Latino youth. *Journal of Community Psychology*, 31(5), 513–529. <https://doi.org/10.1002/jcop.10064>
- Raisanen, E. D. (2013). *The role of hardiness, family hardiness, and parenting self-efficacy on parenting stress in adoptive parents* [Unpublished master's thesis]. University of Southern Mississippi.
- Rokach, L., & Maimon, O. (2008). *Data mining with decision trees: Theory and applications* (2nd ed.). World Scientific.
- Sameroff, A. (2010). A unified theory of development: A dialectic integration of nature and nurture. *Child Development*, 81(1), 6–22. <https://doi.org/10.1111/j.1467-8624.2009.01378.x>
- Shek, D. L., & Lin, L. (2014). Personal well-being and family quality of life of early adolescents in Hong Kong: Do economic disadvantage and time matter? *Social Indicators Research*, 117(3), 795–809. <https://doi.org/10.1007/s11205-013-0399-3>
- Shek, D. T. L. (2005). Perceived parental control processes, parent–child relational qualities, and psychological well-being in Chinese adolescents with and without economic disadvantage. *The Journal of Genetic Psychology*, 166(2), 171–188. <https://doi.org/10.3200/GNTP.166.2.171-188>
- Sledjeski, E. M., Dierker, L. C., Brigham, R., & Breslin, E. (2008). The use of risk assessment to predict recurrent maltreatment: A Classification and Regression Tree Analysis (CART). *Prevention Science*, 9(1), 28–37. <https://doi.org/10.1007/s1121-007-0079-0>
- Wadsworth, M. (2012). Working with low-income families: Lessons learned from basic and applied research on coping with poverty-related stress. *Journal of Contemporary Psychotherapy*, 42(1), 17–25. <https://doi.org/10.1007/s10879-011-9192-2>
- Wadsworth, M. E., Rindlaub, L., Hurwich-Reiss, E., Rienks, S., Bianco, H., & Markman, H. J. (2013). A longitudinal examination of the Adaptation to Poverty-Related Stress Model: Predicting child and adolescent adjustment over time. *Journal of Clinical Child and Adolescent Psychology*, 42(5), 713–725. <https://doi.org/10.1080/15374416.2012.755926>
- Weiss, J., Robinson, S., Fung, S., Tint, A., Chalmers, P., & Lunskey, Y. (2013). Family hardiness, social support, and self-efficacy in mothers of individuals with autism spectrum disorders. *Research in Autism Spectrum Disorders*, 7(11), 1310–1317. <https://doi.org/10.1016/j.rasd.2013.07.016>
- Yap, D., Lau, L., Nasir, N., Cameron, C., Matthews, J., Tang, H. N., & Moore, D. W. (2014). Evaluation of a parenting program for children with behavioural problems: Signposts in Singapore. *Journal of Intellectual & Developmental Disability*, 39(2), 214–221. <https://doi.org/10.3109/13668250.2014.899567>