

Postnatal adjustment of Chinese parents: A two-wave panel study in Taiwan

Luo Lu

National Central University, Taiwan, ROC

This study focused on examining the relationships between stress, resources, and adjustment of Chinese married mothers and fathers following childbirth. Guided by a generic theoretical model of parenthood transition, the aim of the current study was threefold. First, longitudinal data were collected to clarify the impact of parenthood from 6 weeks postnatal (*Time 1*) to 6 months postnatal (*Time 2*). A diachronic design is more advantageous in making causal inferences as baseline levels of mental health and marital satisfaction can be controlled. Second, a gender-balanced design was adopted to examine the transition processes for both men and women to overcome our shortcomings in understanding men's experiences. Third, this study was conducted in a Chinese society to examine the transition to parenthood as embedded in this particular cultural context. A total of 483 parents (253 females, 230 males) took part in this two-wave panel study. Hierarchical multiple regression analyses and structural equation modelling techniques were used to test for direct, moderation, and mediation effects of marital congruence and social support as resources. Results showed that (a) parental stress had negative effects on mental health and marital satisfaction, and these relationships were robust across time and gender; (b) marital congruence and social support had direct as well as mediation effects on adjustment; (c) marital congruence also had moderation (stress buffering) effects on the stress/mental health relationship; (d) over the half-year period, there were no significant changes in stress and adjustment outcomes, yet marital congruence and social support significantly declined, and this trend was the same for both sexes; (e) although males and females did not differ in marital congruence and social support, women reported higher stress, more psychological symptoms, and lower marital satisfaction than men. These gender differences did not change over time. These results were discussed in relation to existing theories and research, as well as the distinct characteristics of the contemporary Chinese society.

Cette étude visait à explorer le processus d'adaptation suivant la naissance d'un enfant chez des mères et des pères chinois mariés. Au total, 483 parents (253 femmes et 230 hommes) ont pris part à cette étude menée en deux temps, soit à 6 semaines et à 6 mois après la naissance de l'enfant. Des analyses de régressions hiérarchiques multiples et la technique de modélisation par équations structurelles ont été employées pour tester les effets directs, modérateurs et médiateurs. Les résultats ont montré que (a) le stress parental a eu des effets négatifs sur la santé mentale et la satisfaction conjugale, et que ces relations étaient stables à travers le temps et les genres; (b) l'harmonie conjugale et le soutien social ont montré des effets directs et médiateurs sur l'adaptation; (c) l'harmonie conjugale a également présenté des effets modérateurs (facteur de protection) sur la relation entre le stress et la santé mentale; (d) au cours de cette période de 6 mois, il n'y a pas eu de changement significatif du stress et de l'adaptation, alors que l'harmonie conjugale et le soutien social ont significativement diminué, cette tendance étant la même pour les deux genres; (e) quoique les hommes et les femmes ne différaient pas quant à l'harmonie conjugale et au soutien social, les femmes ont rapporté plus de stress, plus de symptômes psychologiques et moins de satisfaction conjugale que les hommes. Ces différences reliées au genre n'ont pas changé à travers le temps. Ces résultats ont été discutés en relation avec les théories et la recherche existantes, tout en tenant compte des caractéristiques distinctes de la société chinoise contemporaine.

Este estudio se centró en el examen de la relación entre el estrés, los recursos y el ajuste de madres y padres chinos después del nacimiento de un hijo. Guiados por un modelo teórico genérico de transición a la paternidad, el propósito del presente estudio fue triple. Primero, se recogió datos longitudinales para aclarar el

Correspondence should be addressed to Professor Luo Lu, Institute of Human Resource Management, National Central University, No.300, Jhongda Rd, Jhongli City, Taoyuan County 32001, Taiwan, ROC (E-mail: luolu@mgt.ncu.edu.tw).

This research was supported by a grant from the National Science Council, Taiwan, ROC, NSC89-2413-H-037-008.

impacto de la paternidad a las 6 semanas después del nacimiento (Momento 1) y a los 6 meses después del nacimiento (Momento 2). El diseño diacrónico es el que ofreció más ventajas para la realización de inferencias causales, dado que es posible controlar los niveles de línea base de la salud mental y de la satisfacción marital. Segundo, se adoptó un diseño que equilibró el género para explorar los procesos de transición tanto en hombres como en mujeres para superar las limitaciones que entraña el entender las experiencias masculinas. En tercer lugar, se condujo el estudio en una sociedad china para examinar la transición a la paternidad dentro de ese contexto cultural en particular. Un total de 483 padres (253 mujeres, 230 hombres) participaron en este estudio panel de dos ondas. Se empleó tanto análisis de regresión múltiple como la técnica de modelamiento de ecuaciones estructurales para someter a prueba los efectos directos, moderadores y mediadores de la congruencia marital y el apoyo social como recursos. Los resultados muestran que (a) el estrés de los padres ejerce efectos negativos sobre la salud mental y la satisfacción marital, y que esas relaciones son robustas en el tiempo y el género; (b) la congruencia marital y el apoyo social mostraron tanto efectos directos como mediadores sobre el ajuste; (c) la congruencia marital también mostró efectos moderadores (amortigua el estrés) sobre la relación estrés/salud mental; (d) a lo largo del periodo de medio año, no hubo cambios significativos en los resultados de estrés y ajuste, no obstante la congruencia marital y el apoyo social se redujeron significativamente, y esta tendencia fue la misma para ambos sexos; (e) a pesar de que no hubo diferencia entre hombres y mujeres en cuanto a congruencia marital y apoyo social, las mujeres manifestaron más estrés, más síntomas psicológicos y menos satisfacción marital que los hombres. Estas diferencias de género no cambiaron con el paso del tiempo. Se discuten estos resultados en relación con las teorías y la investigación existentes, así como las características distintivas de la sociedad china contemporánea.

INTRODUCTION

At the turn of the century, the traditionally conservative East Asia is undergoing profound economic and societal modernizations. As a consequence, the divorce rate has skyrocketed in this region. Even though Taiwan is a prototypical Chinese society with a strong Confucian family tradition, the latest official estimate indicates that for every three new marriages one ends in divorce (Executive Yuan, 2004). Research has suggested that problems leading to marital dissolution begin early in relationships (Thornes & Collard, 1979). Transition to parenthood has been described as a "crisis" for both men and woman (Cowan et al., 1985). The present study thus aimed to explore the adjustment of married mothers and fathers following childbirth. The extant research on parenthood adjustment, however, has been heavily influenced by the dominant societal ethos of parenting being a "women's issue" and, consequently, little attention has been paid to men's adjustment following childbirth. Thus, one thrust of the present study was its inclusion of fathers. The two-wave panel design also allowed considerations of both the earlier (6 weeks) and later (6 months) stages of parenting. As it is not a foregone conclusion that Western research findings can be generalized to such a vastly different culture as the Chinese, this study with Chinese parents is both theoretically and practically important.

Impact of parenthood: Mental health and marital satisfaction

Becoming a parent might be a stressful transition (Santrock, 1995) that can incur costs to personal well-being. Abbott and Brody (1985) noted that having a young child aged between 0 and 2 years has the most adverse effect on the mother's physical and mental health. In the West, much extant work has focused on maternal postpartum depression; however, empirical evidence is inconclusive. Cooper, Campbell, Day, Kennerley, and Bond (1988), for example, found that antenatal and postnatal women were no more likely to be depressed than a general population sample of nonpuerperal women. On the other hand, Osofsky (1979) has suggested that postnatal anxiety may affect bonding between mother and child, but this suggestion has not been closely examined.

In contrast to the extensive study on women's postpartum depression, men's physical rather than mental health seems to have received more attention in scientific research. Ferketich and Mercer (1989) found that men's perception of their health was that it was significantly poorer at 8 months postnatal than during their partners' pregnancy. Furthermore, Quill, Lipkin, and Lamb (1984) found that men visited doctors more in the year after their children were born than during their partner's pregnancy. The strong relationship between physical and mental health (Lu, Tseng, & Cooper, 1999; Marks, Goldberg, & Hillier, 1979) suggests that men experiencing a high level of

physical symptoms may actually be having difficulties adjusting to their new role as a father. Thus, the present study expanded the scope of mental health to include depression, anxiety, and somatic symptoms in examining the impact of parenthood transition.

Transition to parenthood has also been found to be associated with a decline in marital satisfaction (Argyle, 1987). This adverse effect on marriage of the arrival of a child is probably caused by the competition for limited resources between parenthood and marriage (Belsky, 1990). However, previous work has focused almost exclusively on mother's reports of marital satisfaction; consequently, we know very little about men's psychological experiences in their transition to fatherhood. One study did examine reports of both men and women, and found that while women's marital satisfaction declined 6 months after childbirth, men's marital satisfaction declined between 6 and 18 months after their children were born (Cowan et al., 1985). It may be speculated that women are more sensitive to the impact of parenthood on their marital relationship, and detect early warning signs; men, on the other hand, may feel the impact of their role change in other ways, such as financial strain at the early parenthood stage (Atkinson & Blackwelder, 1993), and only later recognize that fatherhood may also have affected their marital relationship.

To sum up, extant literature in the West has suggested that the parenthood transition may incur costs on mental health and may suppress marital satisfaction. Specifically, it was hypothesized that *parental stress would be positively related to psychological symptoms and negatively related to marital satisfaction, when stress and outcomes were assessed at the same time, and after the baseline levels of mental health or marital satisfaction were controlled.*

Resources for coping with parenthood stress

Although becoming a parent can be a potentially stressful life event for both men and women, as we have reviewed earlier, new parents still have various resources to help them meet the challenge of parenthood. Social networks are often mobilized to help people cope with the impending or newly acquired status of being a parent, especially women. Previous research has noted that the frequency of contacts with families of origin and with other parents tends to increase over time from pregnancy through 9 months postpartum. Further, the amount of emotional and material support

received from families and friends is likely to be the greatest at 3 months postpartum, especially for first-time parents. Other services, such as baby-sitting, were also provided in some cases (Belsky & Rovine, 1984). While evidence supporting the beneficial effect of social support on well-being is unequivocal (e.g., Wortman & Dunkel-Schetter, 1987), a lack of social support was linked to postpartum depression among women (Howell-White, 1991).

However, men and women may have different experiences of social support during their transition to parenthood. Compared to men, women more actively solicit social support (Lu & Argyle, 1992), and indeed receive more support from others (Lu, 1995). More specifically, mothers more than fathers seek social support as a means of adjusting to parenthood (Ventura & Boss, 1983). Furthermore, as mothers are more often the focus of social support provision, men's needs for understanding and support have largely been neglected (Sullivan-Lyons, 1998).

Within the conjugal system, the psychological sense of unity, alliance, and partnership have been found to play a particularly central role in the adjustment to parenthood. Couples who have close/confiding marriages, compared to those who are unhappily married, are more likely to be warm and sensitive parents and to hold positive attitudes about their babies and their parenting roles (Owen, Lewis, & Henderson, 1989). For women, high levels of marital intimacy are also associated with a reduced level of postpartum depression (Stemp, Turner, & Noh, 1986). Previous work has suggested that the single best predictor of postpartum marital adjustment is the level of marital adjustment during a pregnancy (Harriman, 1986), and better adjustment has been linked to cohesive and satisfying couple bonds (Belsky & Pensky, 1988).

In the present study, marital congruence was conceptualized as an indicator of the positive quality of a marital relationship. Marital congruence refers to the extent of conjugal agreement on important issues in life, such as finance, affection, and outlook of life, which has been found to relate to marital satisfaction (Locke & Wallace, 1959). In the context of parenthood transition, research has found that how couples deal with the allocation of childcare and other household chores was a strong predictor of adaptation. Issues such as paternal involvement (Levy-Shiff, 1994), violated expectations for the sharing of responsibilities (Hackel & Ruble, 1992), and the process of decision-making (Osofsky & Culp, 1989) are all predictive of marital satisfaction for both sexes.

The present study thus focused on both social support and marital congruence as resources in the context of adjustment to parenthood. Specifically, it was hypothesized that *both social support and marital congruence would be negatively related to psychological symptoms and positively related to marital satisfaction, when assessed at the same time, and after the baseline levels of mental health or marital satisfaction were controlled*. It was further hypothesized that in addition to these direct effects, *both social support and marital congruence would moderate stress/mental health and stress/marital satisfaction relationships*.

Parenting in a Chinese cultural context

As noted by Phoenix and Woollett (1991), motherhood and fatherhood are socially and culturally constructed; becoming a parent in a Chinese society thus entails some distinct experiences. Confucian philosophy has constructed family and filial piety as the central cultural values that are transmitted and reinforced through social institutions and socialization practices in Chinese societies (Yeh & Bedford, 2003). Traditionally, the ultimate purpose of a marriage is to produce an heir to carry on the family line. The Confucian teachings regard the failure to produce offspring as the gravest violation of filial piety, which still has a normative influence on people's views of parenthood in contemporary Chinese societies (Yue & Ng, 1999).

It is thus important to recognize that, in a Chinese cultural context, becoming a parent is to fulfil a vitally important social duty and obligation as well as to contribute to the collective well-being (Lu, 2001). The stresses and challenges of transition to parenthood, blended with joy and accomplishment, are immense. Furthermore, as first pointed out by the famous anthropologist Francis Hsu (1953), the traditional Chinese culture regards the father-son (child) axis as the primal relationship in the society, so far more energy and resources are allocated to childcare while sacrificing conjugal needs, and the impact of the birth of a child on the Chinese marital relationship is likely to be much greater than in a Western society.

Recent empirical studies in Taiwan have indeed found that Chinese couples view the parent-child relationship as more important than the conjugal relationship (Chen, 1978), and women more than men give higher ratings to the importance as well as to the stress of parental roles (Lu & Lin, 1998). Furthermore, for both men and women, parental stress is detrimental to personal well-being (Lu &

Lin, 1998). Chong (1995) followed up 36 pairs of Chinese parents from when they first knew about the conception of their children for 4 consecutive years. Repeated in-depth interviews revealed the underlying theme of the overriding importance of childcare roles above personal and conjugal needs.

In addition, the close-knit social network of a Chinese society is rather active in providing various kinds of support to the young parents-to-be. Today, though, such help could be a potential source for conflict as young couples may hold very different views regarding childrearing practices to those of their elderly relatives. All these distinct cultural and social characteristics must be taken into account in our effort to understand the transition to parenthood among the Chinese people.

To this end, a generic model of parenthood stress, resources, and adjustment (see Figure 1) was purported, and we have already completed a longitudinal analysis of parenthood transition by following a panel of Chinese parents for a half-year period through the pre- and post-parenthood comparison (Lu, in press). This study, with data from a representative sample of 364 parents in Taiwan, has provided strong support for parts of the model in Figure 1: (a) in cross-sectional analyses, parenthood stress had consistent negative effects on mental health and marital satisfaction (paths 1 & 3); (b) in prospective analyses, stress still had adverse effects on postnatal mental health or marital satisfaction after controlling for their prenatal baseline levels (paths 8-3); (c) social support and marital congruence had beneficial effects on the parenthood adjustment (paths 2 & 4); and (d) compared to men, women reported higher stress, more psychological symptoms, and lower marital satisfaction than men, but received more social support. Another publication (Lu, 2004) reported results of a rigorous dyadic analysis based on a subsample of 90 married couples from the present database; it also confirmed the pattern of sex differences in the timeframe of post-parenthood adjustment.

Like other researchers (Fergusson, Horwood, & Thorpe, 1996; Ferketich & Mercer, 1989), the above study (Lu, in press) focused on adjustment *during* the actual transition of parenthood and examined trajectories from 6 weeks prenatal to 6 weeks postpartum. The present study, however, aimed to trace the impact of parenthood in a continuing manner, focusing on adjustment *after* the transition to parenthood.

The same generic model was adopted, though it was fitted to a different time frame. The aim of the current study was threefold. First, longitudinal

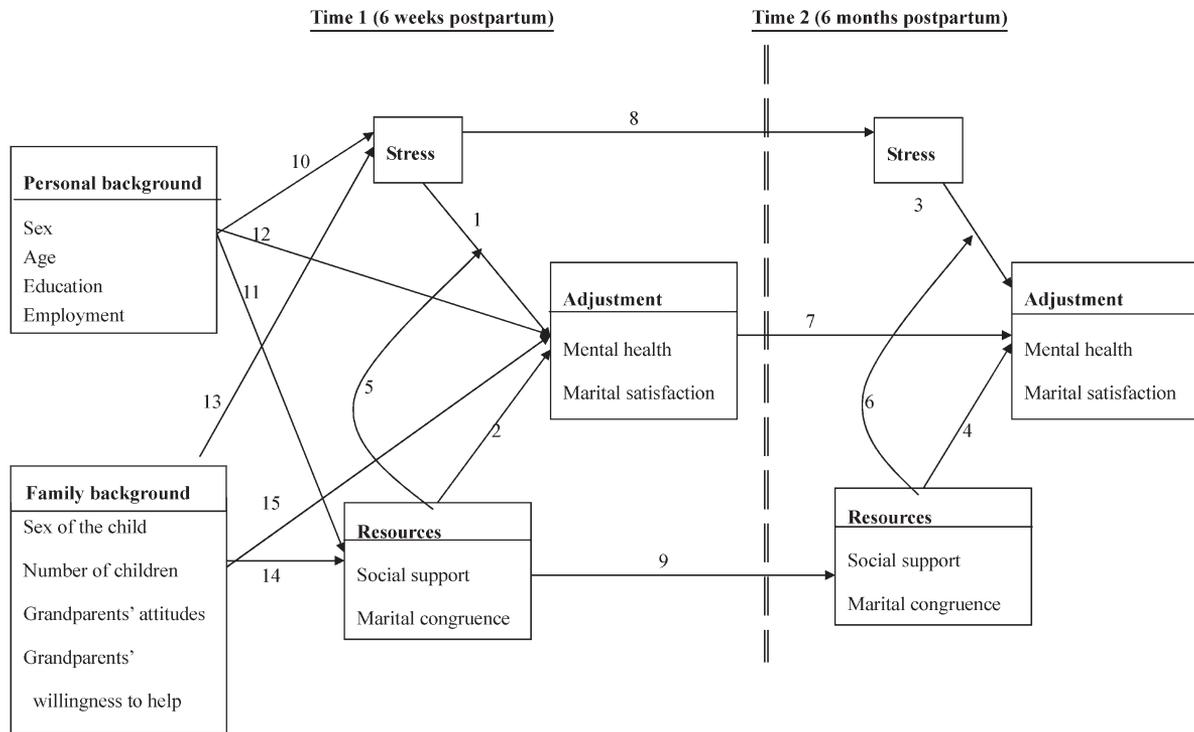


Figure 1. A generic framework of parenthood transition.

data were collected to clarify the impact of parenthood from 6 weeks postnatal (*Time 1*) to 6 months postnatal (*Time 2*). A diachronic design is *more* advantageous in making causal inferences as baseline levels of mental health and marital satisfaction can be controlled. Second, a gender-balanced design was adopted to examine the transition processes for both men and women to overcome our shortcomings in understanding men's experiences. Third, this study was conducted in a Chinese society to examine the transition to parenthood as embedded in this particular cultural context.

More specifically, a two-wave panel study was conducted to examine stress, resources, and adjustment at 6 weeks and 6 months after childbirth. A test of the full generic model in Figure 1 is clearly beyond the scope of a single empirical study, and most personal and family background variables (except gender) were found ineffective in the parenthood transition (Lu, in press). The present study thus focused on examining the relationships between stress, resources and adjustment.

METHODS

Participants

The target population for the present study was parents who had a child born in a particular

month and resided in Kaohsiung, the second largest city in Taiwan. Using the random sampling procedure, parents listed in the Kaohsiung Municipal Birth Registration were invited by phone to participate in the study. As a two-wave panel study, each consenting participant answered a structured questionnaire twice, once when his/her child was 6 weeks old, and another when the child was 6 months old. Participation was anonymous. A total of 483 parents (253 F and 230 M) with newly born children returned completed questionnaires at least once (response rate = 63%). This response rate is comparable to the reported average of mail surveys using the general population ($60\% \pm 20$) (Baruch, 1999).

Two hundred and four participants had data for both Time 1 and Time 2, and 90 pairs were married to each other. Data attrition for Time 2 was due to various causes such as residence change, incorrect contact information, and refusal. Analyses revealed *no* systematic differences between those who initially declined to participate/those who did not participate at Time 2 and those who stayed throughout the study, in terms of gender distribution, age, education attainment, and employment status. However, self-selection bias could not be completely ruled out and results should still be read with due caution.

Analyses reported in the present paper came from data of 230 fathers (47.6%) and 253 mothers

(52.4%). The mean age of participants was 30.02 ($SD = 4.86$). Most of our participants had senior high school education (47.4%), and a further 48.9% had at least some higher education. Almost all fathers were working (96.4%), but only half of the mothers (53.2%) had paid jobs. These participants in the present study were *roughly* representative of Taiwan's young married population and their family characteristics in terms of gender distribution, age, education attainment, and employment status (Executive Yuan, 2004).

Instruments

The structured questionnaire included the following scales and measures.

Stress of parenthood. The Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983) was used in the present study to measure the stress of parenthood transition. Participants were specifically instructed to rate each statement regarding their *parenting experiences* in the last month. Five-point scales were used for rating the frequency of a particular stress feeling (0 = *never*, 4 = *very often*), a high score indicating a higher level of perceived stress. Sample items are "How often have you been upset because of something that happened unexpectedly?" and "How often have you felt confident about your ability to handle your personal problems?" (reverse scored). The Cronbach's α was .81 in the present study.

Mental health. Three subscales, depression, anxiety, and somatic symptoms from the SCL-90-R (Derogatis, Rickels, & Rock, 1976), were used to assess mental symptoms. Three-point rating scales were used, and a high score indicates more mental symptoms, hence *worse* health. The Cronbach's α was .91 in the present study.

Social support. The Inventory of Socially Supportive Behaviors (Barrera, 1981) was used to assess actual received support, which includes emotional, tangible, and informational support, and companionship. Four-point rating scales were used for rating the frequency of receiving a particular form of help (0 = *not at all*, 3 = *very often*), a high score indicating more received support. The Cronbach's α was .93 in the present study.

Marital congruence. Eight items from the Marital Adjustment Scale (Locke & Wallace, 1959) were used to assess conjugal agreement on important life domains (e.g., finance, affection,

and outlook on life). Six-point rating scales were used for rating the degree of conjugal agreement (1 = *always disagree*, 6 = *always agree*), a high score indicating greater marital congruence. The Cronbach's α was .85 in the present study.

Marital satisfaction. This was rated by participants in reference to the marriage *as a whole*. A 7-point scale (1 = *very dissatisfied*, 7 = *very satisfied*) was used; a high score indicating greater satisfaction with the marriage. Previous research has demonstrated that single-item global measures of satisfaction are acceptable, and may even be more indicative than the summation of facets (Scarpello & Campbell, 1983; Wanous, Reichers, & Hudy, 1997).

RESULTS

As there were 90 pairs of married couples in the present sample, the assumption that participants could be treated as independent might be in question. All analyses were conducted twice, once with these 90 pairs taken out and once with them included. Results were generally similar, thus those with the entire sample of 483 participants are reported below.

Gender differences

Gender differences were examined with *t*-tests, and results are presented in Table 1. At both 6 weeks and 6 months postpartum, men perceived less parental stress than women. They also reported better mental health and higher marital satisfaction.

Temporal changes

Longitudinal correlations were computed by correlating scores of the same measures taken at different times. As can be seen in Table 2, these Pearson correlation coefficients ranged from .45 to .57. Such magnitude of longitudinal correlation implied fluctuation over time. Paired *t*-tests were then conducted to compare means of each construct over the 5-month interval. Results showed that stress, mental health, and marital satisfaction were not significantly different at 6 weeks and 6 months postpartum. However, the amount of social support declined over the period, $t(192) = 3.70$, $p < .01$, as did marital congruence, $t(196) = 3.86$, $p < .001$. It seems that while stress and its outcome stayed unchanged, resources were actually shrinking over time following the transition to parenthood.

TABLE 1
t-tests for gender differences postpartum

	<i>Male</i>		<i>Female</i>		<i>df</i>	<i>t</i>
	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>		
6 weeks						
Stress	22.89	6.09	25.06	6.41	449	-3.68***
Mental health	24.82	5.72	27.19	6.53	467	-4.19***
Marital satisfaction	5.05	1.29	4.58	1.53	464	3.66***
Social support	21.44	8.77	22.11	9.71	451	-0.78
Marital congruence	37.02	4.97	36.19	5.90	459	1.63
6 months						
Stress	23.25	5.90	24.99	6.24	199	-2.03*
Mental health	24.84	5.16	26.41	5.35	204	-2.14*
Marital satisfaction	5.47	1.26	4.71	1.45	208	4.01***
Social support	18.44	7.96	19.67	9.96	205	-0.99
Marital congruence	35.71	5.63	34.81	6.74	205	1.04

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

Direct effects of stress and resources on adjustment

Pearson correlations were computed among the main research variables and a full correlation matrix is presented in Table 2.

Several findings are worth attention. First, stress significantly correlated with mental health and marital satisfaction. Simultaneous correlations (stress, mental health, and satisfaction measures taken at the same time) were generally higher than cross-lagged correlations (the above three measures taken at different times). Second, social support significantly correlated with mental health and marital satisfaction in terms of simultaneous correlations. However, cross-lagged correlations were not significant. Third, marital congruence significantly correlated with mental health and marital satisfaction, in terms of both simultaneous and cross-lagged correlations.

The two-wave data offered an opportunity to better explore the direct effects of stress and resources on adjustment after controlling for baseline measures. Regression models were tested predicting mental health and marital satisfaction at 6 months postpartum, while controlling for their "baseline" levels at 6 weeks postpartum. Hierarchical multiple regression analyses were conducted, and the results are presented in Table 3. At Step 1, sex (coded 1 for *male* and 2 for *female*) was entered as there were gender differences on stress, mental health, and marital satisfaction (see Table 1). At Step 2, the "baseline" measure at Time 1 (mental health or marital satisfaction) was entered. At Step 3, stress, social support, and marital congruence at Time 2 were entered.

In predicting mental health at Time 2 (6 months postpartum), all five variables accounted for a

total of 45% of variance. Stress and marital congruence were significantly related to mental health at Time 2 even when mental health at Time 1 (6 weeks postpartum) was controlled for.

In predicting marital satisfaction at Time 2 (6 months postpartum), all five variables accounted for a total of 45% of variance. Marital congruence was significantly related to marital satisfaction at Time 2 even when marital satisfaction at Time 1 (6 weeks postpartum) was controlled for.

Moderating effects of resources on adjustment

Paths 5 and 6 in Figure 1 represented hypothesized *moderating* effects of resources on the stress/adjustment relationship. To test for these indirect effects of resources, a series of hierarchical regression analyses as suggested by Cohen and Cohen (1983) were conducted, and results are presented in Table 4. Following Cohen and Cohen's 3-step procedure, the moderating effect can be demonstrated by the statistical significance and form of the main and interaction terms in a hierarchical regression analysis. In the present study, there were four dependent variables: mental health at Times 1 and 2, and marital satisfaction at Times 1 and 2. There were two proposed moderators: social support and marital congruence. Therefore, a total of eight hierarchical regression analyses were needed. The entry of variables into the equation followed the same sequence: (1) stress; (2) moderator; (3) the product term representing stress \times moderator. All variables were standardized before the regression analyses, and unstandardized regression coefficients are reported from the final equation.

TABLE 2
Pearson correlations among the main research variables

<i>Variables</i>	1	2	3	4	5	6	7	8	9	10
1. Stress (1)	1.00									
2. Mental health (1)	.57***	1.00								
3. Marital satisfaction (1)	-.33***	-.37***	1.00							
4. Social support (1)	-.24***	-.19***	.35***	1.00						
5. Marital congruence (1)	-.34***	-.45***	.51***	.18***	1.00					
6. Stress (2)	.47***	.27***	-.16*	-.08	-.17*	1.00				
7. Mental health (2)	.34***	.49***	-.24***	.03	-.24***	.52***	1.00			
8. Marital satisfaction (2)	-.29***	-.26***	.49***	.11	.40***	-.34***	-.41***	1.00		
9. Social support (2)	-.09	-.09	.26***	.57***	.06	-.18*	-.14*	.21**	1.00	
10. Marital congruence (2)	-.14	-.24***	.35***	-.05	.45***	-.23***	-.37***	.53***	.11	1.00

TABLE 3
Hierarchical regression analyses testing for direct effects of stress and resources

<i>Dependent variable</i>	<i>Step</i>	<i>Entered variables</i>	β	R^2	F	<i>Dependent variable</i>	<i>Step</i>	<i>Entered variables</i>	β	R^2	F
Mental health (2)	1	Sex	-.01			Marital satisfaction (2)	1	Sex	-.17**		
	2	Mental health (1)	.33***				2	Marital satisfaction (1)	.26**		
	3	Stress (2)	.36***				3	Stress (2)	-.13		
		Support (2)	-.01					Support (2)	.08		
		Marital congruence (2)	-.17*	.45	25.49***			Marital congruence (2)	.36***	.45	20.61***

TABLE 4
Hierarchical regression analyses testing for moderation effects of resources

<i>Dependent variable</i>	<i>Step</i>	<i>Entered variables</i>	B	R^2	F	<i>Dependent variable</i>	<i>Step</i>	<i>Entered variables</i>	B	R^2	F
Mental health (1)	1	S (1)	.55***			Marital satisfaction (1)	1	S (1)	-.59***		
	2	SS (1)	-.01				2	SS (1)	.45***		
	3	S (1) × SS (1)	-.29	.33	68.34***		3	S (1) × SS (1)	.01	.19	32.03***
Mental health (1)	1	S (1)	.47***			Marital satisfaction (1)	1	S (1)	-.41***		
	2	MC (1)	-.30***				2	MC (1)	.12***		
	3	S (1) × MC (1)	-.75***	.42	102.17***		3	S (1) × MC (1)	.01	.29	58.57***
Mental health (2)	1	S (2)	.44***			Marital satisfaction (2)	1	S (2)	-.73***		
	2	SS (2)	-.01				2	SS (2)	.25**		
	3	S (2) × SS (2)	-.01	.27	24.13***		3	S (2) × SS (2)	.15	.16	11.96***
Mental health (2)	1	S (2)	.38***			Marital satisfaction (1)	1	S (2)	-.52***		
	2	MC (2)	-.20***				2	MC (2)	.10*		
	3	S (2) × MC (2)	-.99***	.38	39.23***		3	S (2) × MC (2)	.13	.35	34.01***

$p < .05$; ** $p < .01$; *** $p < .001$. S = Stress; SS = Social support; MC = Marital congruence.

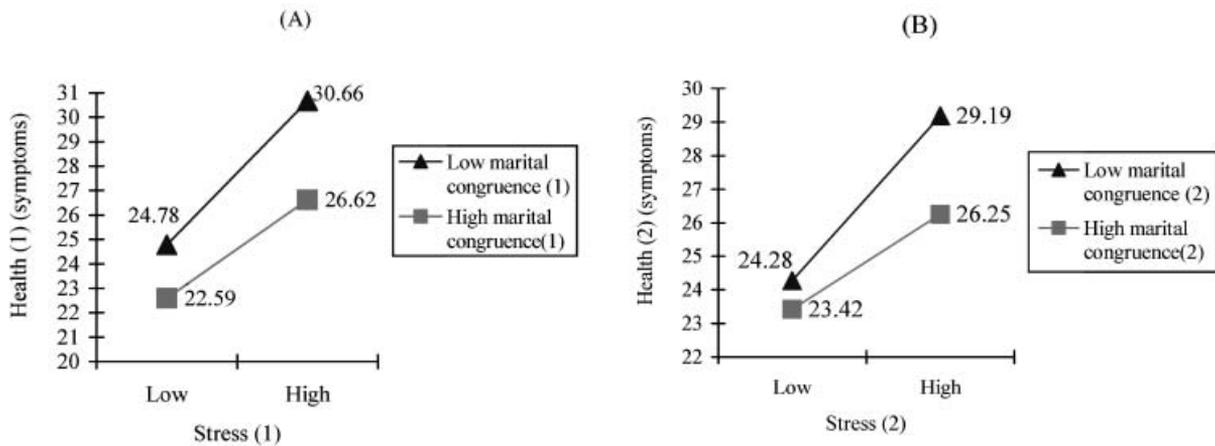


Figure 2. Moderating effects of marital congruence on the stress–health relation.

As can be seen in Table 4, stress contributed significantly to mental health and marital satisfaction at both times postpartum. Marital congruence too seemed to have a stable relationship with mental health and marital satisfaction across time. More importantly, marital congruence had a reliable moderating effect on the stress/mental health relationship at both times. These moderating effects are plotted in Figure 2(A) and (B). As can be clearly seen, marital congruence buffered or alleviated the impact of parental stress on mental health.

Mediating effects of stress and resources on adjustment

Another kind of indirect effect: *Mediation* was implied in the theoretical framework depicted in Figure 1. For instance, previous stress and resources may influence later adjustment through their carry-over effects on later stress and resources (paths 8–3, 9–4). Also, stress and resources at Time 1 may influence mental health at Time 1, which has a carry-over effect on mental health at Time 2 (paths 1–7, 2–7). To test for such mediating effects, structural equation modelling (SEM) techniques are needed. As stated earlier, the model in Figure 1 was useful only as a generic framework to organize specific studies, thus was not testable as a SEM model. Furthermore, moderating effects (paths 5 & 6) were already tested using moderated regression analyses. Instead we focused on the carry-over effects of stress (path 8–3), resources (path 9–4) and mediating effects of prior adjustment (paths 1–7, 2–7), as depicted in Figure 1. To facilitate understanding of mechanisms of two distinct aspects of adjustment, separate models were tested for

mental health and marital satisfaction rather than a full saturated one. For exploratory purposes, model modification procedures were followed to construct the best-fitting models (Raykov, Tomer, & Nesselroade, 1991).

The initial “mental health model” was constructed to include paths 8–3, 9–4, 1–7, and 2–7 in Figure 1. This model was evaluated with the Maximum Likelihood technique provided by AMOS 3.06, and modified by eliminating non-significant paths. As a result, marital congruence at Time 2 was taken out, as the path linking it with mental health at Time 2 was not significant. Three other paths were also omitted (stress1→mental health2, support1→mental health1, marital congruence1→mental health2) for the same reason. The final model is presented in Figure 3, with all paths statistically significant at the level of $p = .05$ and above.

Model evaluation is usually not a simple procedure, and no single descriptive index seems to be superior to the others and impeccable in this regard (Bentler, 1990; Raykov et al., 1991). Basically, evaluating a model is to strike a balance between simplicity vs complexity (reflected in the parsimony indexes), and good fit vs poor fit (reflected in the fit indexes). The “mental health model” reached statistical nonsignificance, $\chi^2(11, N = 204) = 18.06, p = .08$. The model also showed an acceptable level of fit, GFI = 0.98, AGFI = 0.94, RMR = 2.39. In addition, the comparative fit index (CFI) is relatively robust across sample size compared to other fit indexes (Bentler, 1990), and a value at the upper .90s indicates an acceptable fit (CFI = .98 in the present model). RMSEA is a measure of discrepancy per degree of freedom, with a value below .05 to .08 indicating a close fit (RMSEA = .06 in the present model).

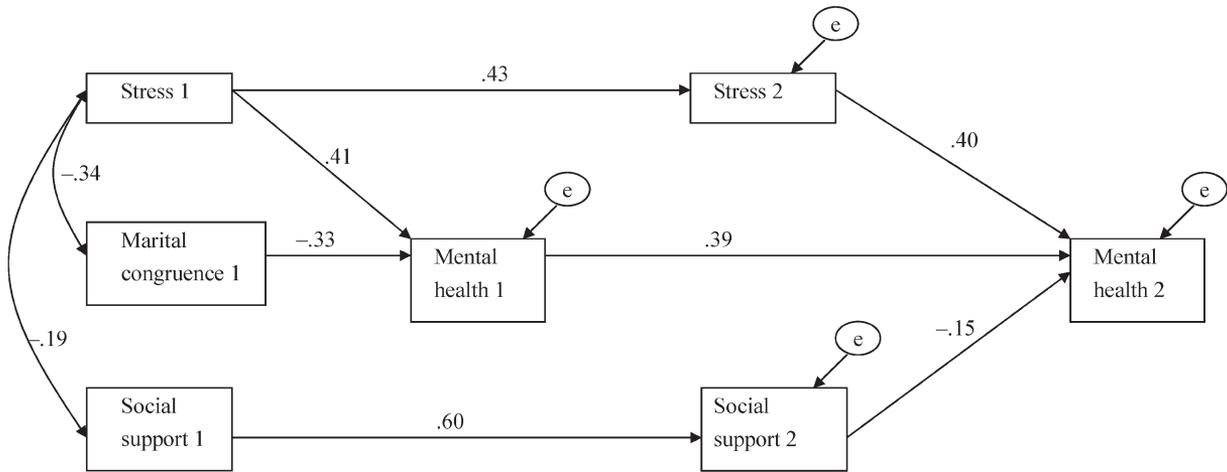


Figure 3. A structural model of mental health.

Taken together, the results of the present model showed an acceptable value of fit.

Exactly the same procedures were followed to construct, modify, and test the “marital satisfaction model.” During the model trimming process, social support at Time 2 was taken out, as the path linking it with marital satisfaction at Time 2 was not significant. Three other paths were also omitted (stress1→marital satisfaction2, support1→marital satisfaction2, marital congruence1→marital satisfaction2) for the same reason. The final model is presented in Figure 4 with all paths statistically significant at the level of $p = .05$ and above.

The “marital satisfaction model” did not reach statistical nonsignificance, $\chi^2 (11, N = 204) = 26.51, p = .005$. The fit indices were very good (GFI = 0.97, AGFI = 0.91), and residuals were small (RMR = 1.82, RMSEA = 0.08). In addition,

the comparative fit index (CFI) of .95 was very good. Taken together, our model showed an acceptable level of fit to the data.

DISCUSSION

The present study was set against the Chinese cultural background. Adopting a panel study design, longitudinal data were collected at two points of time following childbirth, from a representative sample of both men and women. With these methodological strengths, results from the present study warrant serious reflection and careful consideration for researchers and practitioners alike. The following discussion will be organized around three major themes: impact of parenthood, roles of resources, and gender differences.

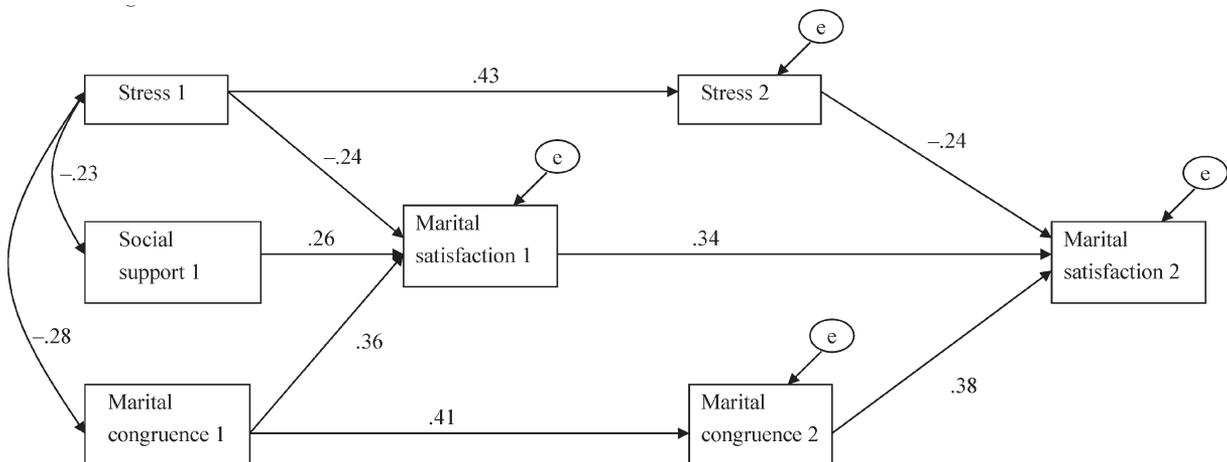


Figure 4. A structural model of marital satisfaction.

Gender differences in parenthood transition

Most extant research relating to the transition of parenthood has focused on maternal distress and adjustment. Consequently, we know very little about men's experiences of fatherhood. The present study was thus rare in drawing a community sample with men and women equally represented. Our results have revealed a stable pattern of gender differences over a half-year period after the child was born. Women consistently reported higher stress, worse mental health, and lower marital satisfaction than men. This pattern of gender differences was more rigorously examined and confirmed using the subset of 90 pairs of husband-wife dyadic data (Lu, 2004).

Our finding of women's or wives' heightened stress and poorer mental health is consistent with existing research on maternal distress and adjustment (Brody, 1985; Cowan et al., 1985). In particular, the Chinese culture places great emphasis on the continuation of the family line, and places the responsibility of childrearing squarely on the shoulders of women (Kao & Lu, 2001; Lu, Gilmour, & Kao, 2001; Yang, 1988). Becoming a mother is not only the most salient role for women (Lu & Lin, 1998), but also culturally sanctioned as a women's legitimate occupation (Chen, 1978). It is thus understandable that becoming a mother may be far more salient and stressful than becoming a father. However, men's experiences of fatherhood are also changing fast in a modern society. Traditionally, the Chinese fathers are sole wage earners and have little to do with childcare. Contemporary fathers, though, are expected to share household duties including childcare responsibilities, especially when mothers are working too (Lu & Lin, 1998). Although women still assume a greater share of homemaking activities, the pressure of being "a new good man" is increasing (Lu, Hwang, & Kao, 2005). As can be seen in the present study, parenthood stress was detrimental to both men's mental health and their marital happiness. Previous research has even found that husbands report the greater degree of unhappiness (Cowan et al., 1985). However, a longer follow-up phase is needed to identify sensitive points for the change and turning point in mental health and marital adjustment. For the time being, it is already clear that both men and women feel the negative effects of having a child on their mental health and marital relationship. Hence scientific research and intervention should better address the needs and concerns of both genders.

Impact of parenthood: Immediate vs long-lasting effects

Existing theories and research have suggested that becoming a parent can be a challenge that may have profound effects on both the individual and the developing family (Abbott & Brody, 1985; Argyle, 1987; Cowan et al., 1985; Sullivan-Lyons, 1998). The present study focused on the adjustment *after* the transition to parenthood and examined trajectories of post-parenthood adjustment for both men and women. Parenthood stress was found to have a negative impact on mental health 6 months following childbirth after controlling for the "baseline" level. Psychological distress is, therefore, more than the spillover of previous distress, and parental stress is the antecedent of psychological symptoms.

Our SEM models depicted more clearly the relationship between parental stress and adjustment. Where mental health is concerned, parental stress has three routes to assert its impact (see Figure 3). First, stress has a direct effect on concurrent mental health. Second, it has an indirect effect on later mental health through its impact on concurrent mental health. Third, stress has another indirect effect on later mental health through its carryover effect on later stress. Similar mechanisms also apply to marital satisfaction (see Figure 4). Taken together, the above results have supported paths 1, 3, 8-3, 1-7 in the generic framework (Figure 1).

With its methodological strengths, the present study has extended the current understanding of parenthood transition in several ways. First, as stress, mental health, and marital satisfaction were measured twice, data at Time 1 and Time 2 can serve as a cross-validation for each other. The pattern of relations between stress, mental health, and marital satisfaction was identical in both sets of data (Table 2). As a further check, the entire sample was randomly split into two equivalent parts and the two SEM models (Figures 3 and 4) were cross-validated. They fitted the two subsamples equally well. The robustness of this finding adds weight to our claim about the adjustment process to parenthood transition.

Second, there was moderate temporal stability regarding perceived stress, mental health, and marital satisfaction from 6 weeks to 6 months following childbirth. This suggests that conditions over this substantial period were quite stable. In other words, the impact of becoming a parent is of a stable and continuing nature. Furthermore, parental stress did not lessen over the 6 months period following childbirth. Consequently, mental

health and marital satisfaction did not improve either. Furthermore, additional analyses revealed no gender difference in this pattern. Corroborating previous findings (e.g., Fergusson et al., 1996; Ferketich & Mercer, 1989), it can be concluded that the stressful impact of parenthood may be both immediate and long-lasting for both men and women.

Third, the mental health measure in the present study included not only depression, but also anxiety and common somatic symptoms. The above findings, therefore, went beyond the existing research on postnatal depression and provided a wider scope for the appreciation of mental health issues related to the transition to parenthood.

Finally, the stressful impact of parenthood found in the present study also corroborates the results of previous studies among the Chinese (Chong, 1995; Lu & Lin, 1998). It is clear now that, although the Chinese culture places great emphasis on the family and socially sanctioned parenthood as a divine obligation, becoming a parent is still a stressful transition for both men and women. In a time of rising divorce rate and heightened general life stress, young parents deserve more scientific recognition and understanding of the stress associated with parenthood. Hopefully, more concerted and effective help such as community intervention can be provided to people at such a crossroads of family life (Lu, in press).

Role of resources: Social support vs marital congruence

Although entering parenthood is indeed challenging and stressful, there are still quite considerable individual differences in dealing with this transition. The two structural models (Figures 3 and 4) revealed some adjustment mechanisms involving social support. Where mental health is concerned, support has an indirect effect on later mental health through its carryover effect on later support. Those who receive more support earlier on tend to retain their support, which protects them from distress. Where marital satisfaction is concerned, support has an indirect effect on later satisfaction through its contribution to concurrent satisfaction. Social support helps to enhance marital satisfaction, which is maintained over time. Taken together, the above results have supported paths 2, 4, 9-4, 2-7 in the generic framework (Figure 1).

Marital congruence, too, has demonstrated an unequivocal beneficial effect in the transition to parenthood. For both mental health and marital

satisfaction, the protective effect of marital congruence was reliable and robust (see Tables 2 and 3).

In addition to these direct effects, marital congruence also demonstrated a reliable moderating effect on the stress/mental health relationship at 6 weeks and 6 months postpartum (see Table 4 and Figure 2). Furthermore, mediation effects of marital congruence on adjustment were also found (Figures 3 and 4). Where mental health is concerned, marital congruence has an indirect effect on later mental health through its contribution to concurrent mental health. Marital congruence protects mental health, which is maintained over time. Where marital satisfaction is concerned, marital congruence has two routes of effect. First, marital congruence has an indirect effect on later satisfaction through its contribution to concurrent satisfaction. Marital congruence helps to enhance marital satisfaction, which is maintained over time. Second, marital congruence has an indirect effect on later marital satisfaction through its carryover effect on later marital congruence. Taken together, the above results have supported paths 2, 4, 9-4, 2-7 in the generic framework (Figure 1).

It is clear that in the crucial transition to parenthood, resources within the conjugal system are indeed very important and effective. Previous study has noted that for women, high levels of marital intimacy are associated with a reduction in the degree of postpartum depression (Stemp et al., 1986). The above results extend the protective role of marital satisfaction to a much wider scope of adjustment for both men and women.

Limitations

It should be kept in mind that these data came from a cross-sectional self-report design. One cannot draw causal conclusions, and there is the concern about possible percept-percept bias. Arguing against this possibility are the findings that 20% of the correlation coefficients and one third of regression coefficients were nonsignificant (see Tables 2 and 4). This suggests that there was no pervasive underlying bias inflating these relationships. Nonetheless, one should still be cautious in interpreting this data, as well as data from other studies using similar designs.

One more limitation of the present study was the use of a one-item measure for marital satisfaction. A multi-item scale would strengthen the validity of findings. Type I errors also cannot be completely ruled out when multiple analyses were run.

The other limitation of the present study is that the analysis was limited to parents *after* childbirth. Ideally, the same participants should be studied prior to childbirth and followed afterwards for a substantial period of time to plot trajectories of parenthood adjustment. A separate sample of expecting parents ($N = 364$) were studied twice at 6 weeks before and 6 weeks after childbirth, and can act as a comparison group (Lu, in press). Using the same measures as those in the present study, at 6 weeks prenatal, fathers reported stress at 21.95, and mothers at 23.03; at 6 weeks postnatal, fathers reported stress at 21.64, and mothers at 23.93. The present sample did seem to report somewhat inflated levels of stress, though comparisons with clinical samples were not possible.

Manuscript received December 2004
Revised manuscript accepted August 2005

REFERENCES

- Abbott, D. A., & Brody, G. H. (1985). The relation of child age, gender, and number of children to the marital adjustment of wives. *Journal of Marriage and the Family*, *47*, 77–84.
- Argyle, M. (1987). *The psychology of happiness*. London: Methuen.
- Atkinson, M. P., & Blackwelder, S. P. (1993). Fathering in the 20th century. *Journal of Marriage and the Family*, *55*, 975–986.
- Barrera, M. (1981). Social adjustment in the pregnant adolescents: Measurement issues. In B. H. Gottlieb (Ed.), *Social networks and social support* (pp. 69–96). London: Sage.
- Baruch, Y. (1999). Response rate in academic studies: A comparative analysis. *Human Relations*, *52*, 421–438.
- Belsky, J. (1990). Children and marriage. In F. D. Fincham & T. N. Bradbury (Eds.), *The psychology of marriage: Basic issues and applications* (pp. 119–134). New York: Guilford Press.
- Belsky, J., & Pensky, E. (1988). Marital change across the transition to parenthood. *Marriage and Family Review*, *12*, 133–156.
- Belsky, J., & Rovine, M. (1984). Social-network contact, family support, and transition to parenthood. *Journal of Marriage and the Family*, *46*, 455–467.
- Bentler, P. M. (1990). Comparative indexes in structural models. *Psychological Bulletin*, *107*, 238–246.
- Brody, E. M. (1985). Parent care as a normative family stress. *Gerontologist*, *25*, 19–29.
- Chen, J. F. (1978). *Marital role behavior and marital satisfaction*. Master's dissertation, National Taiwan University.
- Chong, S. J. (1995). *Personality and attitude changes during the transition to parenthood* (Tech. Rep. NSC842413-H-004-004). Taipei, Taiwan: National Science Council.
- Cohen, J., & Cohen, P. (1983). *Applying multiple regression/correlation analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates Inc.
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, *24*, 385–396.
- Cooper, P. J., Campbell, E. A., Day, A., Kennerley, H., & Bond, A. (1988). Nonpsychotic psychiatric disorder after childbirth. *British Journal of Psychiatry*, *152*, 799–806.
- Cowan, C., Cowan, P., Heming, G., Garrett, E., Coysh, W., Curtis-Boles, H., & Boles, A. (1985). Transitions to parenthood: His, hers and theirs. *Journal of Family Issues*, *6*, 451–482.
- Derogatis, L. R., Rickels, K., & Rock, A. F. (1976). The SCL-90MMPI: A step in the validation of a new self-report scale. *British Journal of Psychiatry*, *128*, 280–289.
- Executive Yuan. (2004). *Report on the nation's family life*. Taipei: Author.
- Fergusson, D. M., Horwood, L. J., & Thorpe, K. (1996). Changes in depression during and following pregnancy: ALSPAC Study Team, Study of pregnancy and children. *Paediatric and Prenatal Epidemiology*, *10*, 279–293.
- Ferketich, S. L., & Mercer, R. T. (1989). Men's health status during pregnancy and early fatherhood. *Research in Nursing and Health*, *12*, 137–148.
- Hackel, L. S., & Ruble, D. N. (1992). Changes in the marital relationship after the first baby is born: Predicting the impact of expectancy disconfirmation. *Journal of Personality and Social Psychology*, *62*, 944–957.
- Harriman, L. C. (1986). Marital adjustment as related to personal and marital changes accompanying parenthood. *Family Relations*, *35*, 233–239.
- Howell-White, S. (1991). *The relationship of locus of control to postpartum depression*. Paper presented at the meeting of the American Sociological Association, Cincinnati, OH, USA.
- Hsu, L. G. (1953). *The Chinese and the Americans: Two ways of life*. New York: Henry Schuman.
- Kao, S. F., & Lu, L. (2001). The relationship between parental rearing attitudes and the perceived stress of JHSEE among junior high school students. *Research in Applied Psychology*, *10*, 221–250.
- Levy-Shiff, R. (1994). Individual and contextual correlates of marital change across the transition to parenthood. *Developmental Psychology*, *30*, 591–601.
- Locke, H. J., & Wallace, K. M. (1959). Short marital-adjustment and prediction tests: Their reliability and validity. *Marriage and Family Living*, *21*, 251–255.
- Lu, L. (1995). Correlates of social support: Personal characteristics and social resources. *Counseling Psychology Quarterly*, *8*, 173–181.
- Lu, L. (2001). Understanding happiness: A look into the Chinese folk psychology. *Journal of Happiness Studies*, *2*, 407–432.
- Lu, L. (2004). Sex differences and conjugal interdependence on parenthood stress and adjustment: A dyadic longitudinal Chinese study. *Marriage and Family Review*, *36*, 75–93.
- Lu, L. (in press). The transition to parenthood: Stress, resources and gender differences in a Chinese society. *Journal of Community Psychology*.
- Lu, L., & Argyle, M. (1992). Receiving and giving support: Effects on relationships and well-being. *Counselling Psychology Quarterly*, *5*, 123–133.

- Lu, L., Gilmour, R., & Kao, S. F. (2001). Culture values and happiness: An East–West dialogue. *Journal of Social Psychology, 141*, 477–493.
- Lu, L., Hwang, M. T., & Kao, S. F. (2005). The bi-directional conflict of work and family: Antecedents, consequences and moderators. *Research in Applied Psychology, 27*, 133–166.
- Lu, L., & Lin, Y. Y. (1998). Family roles and happiness in adulthood. *Personality and Individual Differences, 25*, 195–207.
- Lu, L., Tseng, H. J., & Cooper, C. L. (1999). Managerial stress, job satisfaction and health in Taiwan. *Stress Medicine, 15*, 53–64.
- Marks, J., Goldberg, D. P., & Hillier, V. F. (1979). Determinants of the ability of General Practitioners to detect psychiatric illness. *Psychological Medicine, 11*, 535–550.
- Osofsky, J. D. (1979). *Handbook of infant development*. New York: Wiley.
- Osofsky, J. D., & Culp, R. E. (1989). Risk factors in the transition to fatherhood. In S. H. Cath, A. Gurwitt, & L. Gunsberg (Eds.), *Fathers and their families* (pp. 145–165). Hillsdale, NJ: Analytic Press.
- Owen, M. T., Lewis, J. M., & Henderson, V. K. (1989). Marriage, adult adjustment, and early parenting. *Child Development, 60*, 1015–1024.
- Phoenix, A., & Woollett, A. (1991). Motherhood, social construction and psychology. In A. Phoenix, A. Woollett, & E. Lloyd (Eds.), *Motherhood: Meanings, practices and ideologies* (pp. 13–27). London: Sage.
- Quill, T. E., Lipkin, M., & Lamb, G. S. (1984). Health seeking by men in their spouse's pregnancy. *Psychosomatic Medicine, 46*, 277–283.
- Raykov, T., Tomer, A., & Nesselroade, J. R. (1991). Reporting structural equation modeling results in psychology and aging: Some proposed guidelines. *Psychology and Aging, 6*, 499–503.
- Santrock, J. W. (1995). *Life-span development* (5th ed.). Madison, WI: Brown & Benchmark.
- Scarpello, V., & Campbell, J. P. (1983). Job satisfaction: Are all the parts there? *Personnel Psychology, 36*, 577–600.
- Stemp, P. S., Turner, M. A., & Noh, S. (1986). Psychological distress in the postpartum period: The significance of social support. *Journal of Marriage and the Family, 48*, 271–277.
- Sullivan-Lyons, J. (1998). Men becoming fathers: 'Sometimes I wonder how I'll cope'. In S. Clement (Ed.), *Psychological perspectives on pregnancy and childbirth*. London: Churchill-Livingstone.
- Thornes, B., & Collard, J. (1979). *Who divorces?*. London: Routledge & Kegan Paul.
- Ventura, J. N., & Boss, P. G. (1983). The family coping inventory applied to parents with new babies. *Journal of Marriage and the Family, 45*, 867–875.
- Wanous, J. P., Reichers, A. E., & Hudy, M. J. (1997). Overall job satisfaction: How good are single-item measures? *Journal of Applied Psychology, 82*, 247–252.
- Wortman, C. B., & Dunkel-Schetter, C. (1987). Conceptual and methodological issues in the study of social support. In A. Baum & J. E. Singer (Eds.), *Handbook of psychology and health* (pp. 63–107). Hillsdale, NJ: Lawrence Erlbaum Associates Inc.
- Yang, K. S. (1988). A conceptual analysis of filial piety among the Chinese people. In K. S. Yang (Ed.), *Psychology of the Chinese people*. Taipei: Laurent.
- Yeh, K. H., & Bedford, O. (2003). A test of the Dual Filial Piety model. *Asian Journal of Social Psychology, 6*, 215–228.
- Yue, X., & Ng, S. H. (1999). Filial obligations and expectation in China: Current views from young and old people in Beijing. *Asian Journal of Social Psychology, 2*, 215–226.