

# Development of an Instrument to Assess Perceived Self-Efficacy in the Parents of Infants

Rudi Črnčec,<sup>1,2\*</sup> Bryanne Barnett,<sup>3\*\*</sup> Stephen Matthey<sup>2†</sup>

<sup>1</sup>MARCS Auditory Laboratories, University of Western Sydney, Milperra, NSW, Australia

<sup>2</sup>Infant Child and Adolescent Mental Health Service Research Unit,  
Sydney South West Area Health Service, Australia

<sup>3</sup>Karitane, Caring for Families, Carramar, NSW, Australia  
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**Abstract:** In addition to research applications, the measurement of perceived parental self-efficacy (PPSE) could be useful clinically in screening for parenting difficulties, targeting interventions, and evaluating outcomes. In this research we examined the psychometric properties of the Karitane Parenting Confidence Scale (KPCS), a new 15-item PPSE measure. A no-problem control group and three clinical groups comprising 187 mothers with infants were recruited. The KPCS showed acceptable internal consistency (Cronbach's alpha = .81), test-retest reliability ( $r = .88$ ), and discriminant and convergent validity. A cut-off score was determined, and the scale's sensitivity and positive predictive power was 86% and 88%, respectively. The KPCS may prove a useful addition to tools for the assessment of parents and infants presenting to clinical services. © 2008 Wiley Periodicals, Inc. *Res Nurs Health* 31: 442–453, 2008

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Driven largely by an increasing appreciation of the predictive value of parents' beliefs and attitudes, interest in measuring these constructs in the parents of young children has mushroomed over recent decades (Lovejoy, Verda, & Hays, 1997). Findings and implications arising from this broad research effort have been constrained however, by measurement issues including poor scale psychometrics and a dearth of theoretical underpinnings (Holden & Edwards, 1989). Nonetheless, several important aspects of parents'

social cognition have emerged. Primary among these are beliefs parents hold in their ability successfully to perform the tasks of parenting.

Studies in different theoretical traditions and professions have converged on the importance of this parenting belief. For example, researchers examining maternal role attainment (Mercer & Ferketich, 1994; Walker & Montgomery, 1994) and predictors of parenting competence and well-being (Gibaud-Wallston, 1977), as well as those working within a Bandurian self-efficacy

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Correspondence to Rudi Črnčec, Infant Child and Adolescent Mental Health Service Research Unit, Sydney South West Area Health Service, Liverpool Hospital, Mental Health Centre (Level 1: ICAMHS), Locked Bag 7103, Liverpool BC, NSW 1871, Australia.

\*Clinical Psychologist.

\*\*Senior Perinatal and Infant Psychiatrist.

†Senior Clinical Psychologist.

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framework (Ardelt & Eccles, 2001), have reported that parents' confidence in their parenting ability is a key factor in predicting a range of parent and child outcomes (Jones & Prinz, 2005). High parenting confidence has been shown to act as a buffer against factors such as parental depression, stress, relationship difficulties, and compromised child development; and, it is associated with actual parenting competence and positive child outcomes (Coleman & Karraker, 1997).

Given the range of perspectives from which parenting confidence has been addressed, different terminology has been used to describe this construct in the literature, including self-efficacy, parenting self-agency, parenting self-definition, parental sense of competence, and parenting self-definition (Hess, Teti, & Hussey-Gardner, 2004). de Montigny and Lacharite (2005) suggested that notwithstanding the need for further research to clarify the relationship between these presumably overlapping constructs, as well as possible sub-constructs, most researchers appear to be measuring a construct analogous to self-efficacy.

Perceived parental self-efficacy (PPSE) may be defined as "beliefs or judgments a parent holds of their capabilities to organize and execute a set of tasks related to parenting a child" (de Montigny & Lacharite, 2005, p. 390). Self-efficacy theory is among the most thoroughly explicated and widely studied theories in the social sciences (Bandura, 1977, 1997b). Research findings spanning a diverse range of tasks and populations consistently have shown that individuals with high self-efficacy in a given area tend to trust their own abilities in the face of environmental demands, conceptualize problems more as challenges than as threats, experience less emotional arousal when engaged in challenging tasks, and persevere in the face of difficult situations (Jerusalem & Mittag, 1995). These beliefs, in turn, often are associated with greater *competence* in task performance (Bandura, 1989). Moreover, Bandura (1997a) specified criteria for the construction of scales to measure self-efficacy that would likely improve the construct validity of measures, including the use of task-specific items and a response format that allows participants to indicate their degree of confidence in performing the task. For these reasons, the construct of self-efficacy holds considerable appeal as an organizing theoretical framework for research and instrument development in this area.

Four main antecedents to self-efficacy have been articulated, including: (a) prior experience at the task, (b) experiencing low levels of arousal or stress when engaged in the task, (c) the opportu-

nity to observe others perform the task, and (d) receiving positive feedback from others (Bandura, 1997b). In the context of PPSE, the social support aspects of this theory (c and d) may be particularly relevant in affecting parents' perceptions of their parenting ability. A long history of research indicates the importance to parental well-being of a supportive social environment during a child's early years (e.g., Cutrona & Troutman, 1986; Teti & Gelfand, 1991). These factors are, however, seldom addressed in contemporary PPSE scales.

Notwithstanding measurement inconsistencies among studies, several comprehensive reviews of research in the broad area of PPSE have been conducted (Coleman & Karraker, 1997; Jones & Prinz, 2005; Sabatelli & Waldron, 1995). In the most recent of these, Jones and Prinz reported that PPSE was principally associated with the following three areas: (a) *parental competence*, for which evidence is considered strong, with many studies indicating that high PPSE is related to competent and positive parenting practices, strategies, and behaviors (e.g., Bohlin & Hagekull, 1987; Izzo, Weiss, Shanahan, & Rodriguez-Brown, 2000); (b) *parental psychological functioning*, with high PPSE associated with lower rates of parental depression and higher satisfaction in the parenting role, and, to a lesser extent, with lower stress and better coping (e.g., Coleman & Karraker, 2000; Cutrona & Troutman, 1986; Dumka, Stoerzinger, Jackson, & Roosa, 1996; Gross, Conrad, Fogg, & Wothke, 1994; Scheel & Rieckmann, 1998); and (c) *child adjustment*, with low PPSE associated with child behavior problems and socio-emotional maladjustment and, to a more limited extent, with academic under-achievement and child maltreatment (e.g., Bogenschneider, Small, & Tsay, 1997; Brody, Flor, & Gibson, 1999; Peterson, Tremblay, Ewigman, & Saldana, 2003).

In addition to these largely correlational studies, several authors have identified PPSE as a mediator of the effects of several widely recognized correlates of parenting quality, including maternal depression, stress, and child temperament (e.g., Bugental, Blue, & Cruzcosa, 1989; Goodnow & Collins, 1990; Johnston & Mash, 1989; Teti & Gelfand, 1991). Taken together, the accumulated body of research suggests that PPSE is an important resiliency or protective factor and is a predictor and possible mediator of parenting competence and child outcomes.

The measurement of PPSE has useful applications across several contexts. In addition to research aimed at elucidating correlates and predictive properties of PPSE and building

theories of influences on parental functioning, clinical providers may also need to assess PPSE for a variety of reasons, including screening for parent-perceived difficulties, and selection and evaluation of appropriate interventions (Kendall & Bloomfield, 2005). Many services working with the families of young children aim to empower parents, that is, to improve parents' confidence in their parenting ability. Given the association between PPSE and positive parent and child outcomes, several authors have suggested using PPSE as a specific target for intervention (Coleman & Karraker, 1997; Jones & Prinz, 2005).

Despite the value of measuring PPSE, and the strong theoretical properties and theory building potential of this construct, there are relatively few psychometrically strong measures presently available. Those measures with the most robust psychometric properties, for example the Parenting Stress Index—Competence Subscale (Abidin, 1995) and the Parenting Sense of Competence Scale—Efficacy Subscale (Gibaud-Wallston, 1977; Johnston & Mash, 1989) were designed with domain-general items. These scales are not tailored to the tasks facing parents of a child of a particular age; rather they are suitable for a range of child ages. For example, the Parenting Sense of Competence Scale—Efficacy Subscale includes the item "Being a parent is manageable, and any problems are easily solved" (Gibaud-Wallston). Such domain-general scales may not prove sufficiently sensitive to the issues that, for example, parents of infants face. Therefore, the power of studies investigating treatment effects may be affected, and the ability to enhance knowledge where PPSE is a dependent variable may be compromised (Lipsey, 1990). Because of their high profile within the research literature and established normative information, however, domain-general instruments to assess PPSE are being used by many clinical services (Sabatelli & Waldron, 1995).

An alternative approach to PPSE scale development, and that advocated by Bandura (1997a), involves the use of task-specific items. For example, the widely used Maternal Efficacy Questionnaire (Teti & Gelfand, 1991) includes the item "When your baby is upset, fussy or crying, how good are you at soothing him or her?" Investigators across a range of research areas focusing on personal beliefs and attitudes have argued that task-specific measures may have greater predictive validity, because of their greater sensitivity, than domain-general measures (Coleman & Karraker, 2003; Marsh, Ellis, & Craven, 2002).

A search of the literature revealed approximately 15 task-specific scales of PPSE for parents of infants. Of these, the 22-item Infant Care Questionnaire (Secco, 2002) and the 25-item Parental Expectations Survey (Reece, 1992) possess the strongest overall psychometric properties. A large number of the other task-based scales currently lack adequate validity data, and a number have questionable construct validity, incorporating factors other than PPSE, such as financial pressures (Holden & Edwards, 1989). None of the 15 task-specific scales possess an empirically derived cut-off score or reliable change information, which could ultimately limit their use in clinical settings. Thus, although there is a seeming abundance of these measures, their applicability to the clinical context is limited. Given the importance of PPSE as a predictor of parent and child outcomes, and the clear utility of measuring parenting confidence within clinical contexts, there is a need for further instrument development in this area.

The purpose of the present study was to develop and provide a preliminary evaluation of the psychometric properties of a new instrument, the Karitane Parenting Confidence Scale (KPCS), a tool developed specifically to measure PPSE in the parents of infants aged 0–12 months attending a clinical parenting service. The goals were to examine the reliability (internal consistency, test–retest) and factorial, discriminant, and concurrent validity of the KPCS, and to provide an initial recommendation regarding clinical cut-off scores.

## METHOD

The University of Western Sydney and Sydney South West Area Health Service Human Research Ethics Committees approved the study. All study participants provided informed consent.

### Instrument Development

**Focus groups.** The first author conducted five 1.5-hour focus groups with staff ( $n=45$ ) employed across different service tiers of Karitane, Caring for Families, an Australian *parentcraft* service. Parentcraft services offer inpatient, outpatient, day unit, and volunteer home-visiting services to parents experiencing difficulties (e.g., in feeding and sleeping) in parenting their infants or toddlers. At the time of writing this article, we understand that parentcraft hospitals are unique to

Australia (Don, McMahon, & Rossiter, 2002; Fisher, Feekery, & Rowe, 2004).

The purpose of the focus groups was to assess staff perceptions of the tasks and challenges of parenting an infant younger than 12 months, and involved an examination of existing scales of PPSE. Participants included nurses, psychologists, social workers, and psychiatrists. One focus group was conducted with 17 mothers attending an outpatient mothers' group. Focus groups were audio taped, and a thematic cluster analysis of group transcripts was conducted to identify key themes (Boyatzis, 1998). There was considerable overlap and consistency among groups, with themes including feeding, settling, establishing sleep routines, interpreting cries and cues, playing and communicating, responding to needs, bathing, general care, management of minor medical illness, providing a stimulating environment, receiving positive feedback from baby and others, and perceiving social support from the partner and others. Consensus was reached among Karitane focus group participants that *confidence*, rather than *self-efficacy*, should be included in the instrument title, as confidence would be more meaningful and potentially less stigmatizing. In this article parenting confidence is interchangeable with PPSE as defined above. Parenting confidence is distinct from self-confidence, which is typically conceived of as a relatively global and stable personality characteristic relating to feelings of personal likelihood to succeed and cope generally.

**Item selection.** Based on responses from the focus groups, we developed an initial 18-item scale with a four-point response format. Responses were *no, hardly ever; no, not very often; yes, some of the time; and yes, most of the time*. Given the routine use and ease of completion of the Edinburgh Postnatal Depression Scale within clinical services throughout the world (Cox, Holden, & Sagovsky, 1987), a similar item endorsement approach was used in the KPCS, with participants asked to underline the response that best reflected their experience. A panel of six experts experienced in clinical and research work with families of young children assisted in item refinement and in confirming the face validity of the KPCS. Final alterations to the scale were made following pilot testing of a first draft of the KPCS with 20 women (mean age 30.2 years) whose infants were less than 12 months old, recruited through Karitane, Caring for Families. The final 15-item version is available free of charge from the study authors and items are presented in Table 1. Items are scored 0–3, with higher scores

indicating greater PPSE, thus, the range of possible scores on the KPCS is 0–45. During scale development several items were reverse scored. Research within our unit has shown, however, that this format increases the frequency of clinicians incorrectly scoring the KPCS and similar scales. Thus in the final version, items have a common scoring order (that is, the first response option is always scored 0, the second always scored 1, etc.). We believe this change will exert a negligible impact on scale psychometrics, and this is outweighed by benefits to ease of use, scoring, and scoring accuracy. Two items on the KPCS can be endorsed *not applicable*, for instance when the infant is exclusively fed by the partner (item 1), or where the respondent does not have a partner (item 9). These items are scored 2.

**Measures.** A demographics questionnaire was developed to assess variables including participant age and cultural background. In addition, concurrent validity was established using the four instruments described below.

The Parenting Sense of Competence Scale (PSOC) is a 17-item measure originally developed by Gibaud-Wallston (1977) to measure self-esteem in the parents of infants. Johnston and Mash (1989) made several alterations to the scale including renaming the original subscales to the now widely adopted efficacy and satisfaction subscales, and modifying the items to make them suitable for the parents of older children. Johnston and Mash also drew links between the efficacy subscale and the work of Bandura (1989), and the subscale is now widely regarded as a domain-general measure of PPSE. Parents are asked to rate the extent to which they agree with statements regarding their feelings of competence (e.g., “The problems of taking care of a child are easy to solve once you know how your actions affect your child, an understanding I have acquired”). Psychometric data for the efficacy and satisfaction subscales include internal consistency (Cronbach's alpha = .76 and .75, respectively) and 6-week total score test–retest reliability of .73. Both subscales display acceptable convergent, discriminant, and factorial validity (Johnston & Mash). In the present sample, Cronbach's alpha for these subscales was .81 and .80, respectively.

The Maternal Efficacy Questionnaire (MEQ; Teti & Gelfand, 1991) is a 10-item task-specific measure of PPSE that asks mothers to rate how good they perceive themselves to be at performing different parenting tasks (e.g., “How good are you at getting your baby to pay attention to you? For example, when you want your baby to look at you, how good are you at making him or her do it?”).

**Table 1. Karitane Parenting Confidence Scale (KPCS) Items**

- 
- (1) I am confident about feeding my baby<sup>a</sup>  
Not applicable (my partner feeds the baby)<sup>b</sup>
- (2) I can settle my baby<sup>a</sup>
- (3) I am confident about helping my baby to establish a good sleep routine<sup>a</sup>
- (4) I know what to do when my baby cries<sup>a</sup>
- (5) I understand what my baby is trying to tell me<sup>a</sup>
- (6) I can sooth my baby when he/she is distressed<sup>a</sup>
- (7) I am confident about playing with my baby<sup>a</sup>
- (8) If my baby has a cold or slight fever, I am confident about handling this<sup>a</sup>
- (9) I feel sure that my partner will be there for me when I need support<sup>a</sup>  
Not applicable (I don't have a partner)<sup>b</sup>
- (10) I am confident that my baby is doing well<sup>a</sup>
- (11) I can make decisions about the care of my baby<sup>a</sup>
- (12) Being a mother/father is very stressful for me<sup>c</sup>
- (13) I feel I am doing a good job as a mother/father<sup>a</sup>
- (14) Other people think I am doing a good job as a mother/father<sup>a</sup>
- (15) I feel sure that people will be there for me when I need support<sup>a</sup>
- 

Note: (1) Full reference to this article in *Research in Nursing and Health* must be included on all typed versions of the KPCS. (2) The KPCS includes the following preamble.

This scale has 15 items. Please underline the answer that comes closest to how you generally feel. Here is an example already completed:

e.g., I am confident about holding my baby

No, hardly ever

No, not very often

Yes, some of the time

Yes, most of the time

This would mean "I feel confident about holding my baby some of the time".

Please complete the other questions in the same way.

<sup>a</sup>Item responses: no, hardly ever; no, not very often; yes, some of the time; yes, most of the time; scored 0, 1, 2, 3, respectively.

<sup>b</sup>Items endorsed not applicable are scored 2.

<sup>c</sup>Item responses: yes, most of the time; yes, some of the time; no, not very often; no, hardly ever; scored 0, 1, 2, 3, respectively.

Teti and Gelfand found Cronbach's alpha to be .86. Convergent and discriminant validity for the MEQ are acceptable. Cronbach's alpha in the present sample was .79.

The Parenting Stress Index Short Form (PSI-sf; Abidin, 1995) is a direct derivative of the full length PSI. Like the PSI, the 36-item PSI-sf was designed to measure stress in the parent-child system. The PSI-sf consists of three subscales: parental distress, parent-child dysfunctional interaction and difficult child. The parental distress subscale reflects the distress parents experience in their role as a function of personal factors that are directly related to parenting. These factors include perceived child-rearing competence, conflict with spouse or partner, social support, and stresses associated with restrictions placed on other life roles. The parent-child dysfunctional interaction subscale assesses a parent's perception that a child does not meet expectations and that interactions with the child are not reinforcing. The difficult child subscale surveys parents' view of the behavioral character-

istics of their child that make them either easy or difficult to manage. The PSI-sf also gives a total stress score. Cronbach's alpha for the three subscales and total score ranged from .80 to .91, and 6-month test-retest reliability ranged from .68 to .85. Extensive validity data for the PSI-sf are presented in the test manual. The PSI-sf and PSI total stress scores correlate at  $r = .94$ , and the correlation between the competence subscale of the PSI and the PSI-sf parental distress subscale is  $r = .67$  (Abidin).

The Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987) is a 10-item scale used for community screening for postnatal depression. The EPDS asks mothers to rate how they have felt in the past 7 days (e.g., "I have been able to laugh and see the funny side of things"). Cronbach's alpha for the EPDS was .87 and the scale's split-half reliability was .88 (Cox et al.). The EPDS has acceptable convergent, discriminant and predictive validity (Adouard, Glangeaud-Freudenthal, & Golse, 2005; Jadresic, Araya, & Jara, 1995). Cronbach's alpha was .87 in the present sample.

## Procedure

Participants were recruited by a telephone call (in the case of the control group), or by direct personal approach (in the case of the three clinical groups). Table 2 outlines the questionnaires completed by different experimental groups. Participants in the control group completed a 4-week follow-up to determine the test–retest reliability of the KPCS. A 4-week period was selected as this was deemed sufficiently large to reduce the likelihood that parents would remember their previous KPCS responses, yet not so large as to introduce infant maturational effects in parents' PPSE ratings. The major difficulties group completed a post-intervention KPCS following a 5-day residential admission.

## Participants

A sample of 187 women aged 18 years or more and with infants < 12 months of age were recruited to the KPCS validation sample. Four groups of women were recruited comprising a control group recruited from the community, and three clinical groups recruited from Karitane, Caring for Families. Sample size was informed by a power calculation. According to Cohen (1992) with four groups and alpha of .05, a sample size of 45 in each group affords experimental power of .80 to detect group differences of medium effect size. Medium sized effects were considered adequate in this study, as these are likely to indicate clinically meaningful differences.

Demographic data are presented in Table 3. The control group ( $n = 47$ ) was recruited from a register of women who had previously expressed interest in participating in infant research projects

at the University of Western Sydney. No women in this group were receiving assistance for parentcraft or mood-related difficulties. The early-intervention group ( $n = 42$ ) was recruited from women who had self-referred to a 2-hour parenting class focused on preventing infant sleep and settle difficulties. The moderate-difficulties group ( $n = 55$ ) was recruited from women referred to a half-day outpatient program for assistance with parentcraft issues. The major-difficulties group ( $n = 43$ ) was recruited from mothers attending a 5-day residential parentcraft program. Families are typically referred to this program for assistance with infant feeding or sleep and settling issues that have not responded to outpatient management. Groups were well matched on demographic variables, however, in the early-intervention group, infants were significantly younger than infants in the other three groups. In addition, the early-intervention and moderate-difficulties groups were composed of families with fewer children than the control and major difficulties groups. Number of children was not, however, included as a covariate in subsequent analyses given the low correlation between this variable and total KPCS score,  $r(184) = .001$ .

## RESULTS

### Excluded and Not Applicable Items

Three items were excluded from further analyses as fewer than 5% of participants in the major-difficulties group, that is, the residential unit group, selected other than the most confident response category (i.e., *yes, most of the time*). These three items were also selected < 5% of

**Table 2. Measures Completed by Participants in the KPCS Validation Sample**

	Control	Early- Intervention	Moderate- Difficulties	Major- Difficulties
Demographics	✓	✓	✓	✓
Karitane Parenting Confidence Scale	✓	✓	✓	✓
Parenting Sense of Competence Scale (Gibaud-Wallston, 1977)	✓	✓	✓	✓
Maternal Efficacy Questionnaire (Teti & Gelfand, 1991)	✓		✓	
Parenting Stress Index—Short form (Abidin, 1995)	✓			
Edinburgh Postnatal Depression Scale (Cox et al., 1987)	✓	✓		✓
Karitane Parenting Confidence Scale 4-week test–retest	✓			
Karitane Parenting Confidence Scale post-residential admission				✓

Table 3. KPCS Validation Sample Demographic Data

	Control (n = 47)	Early-Intervention (n = 42)	Moderate-Difficulties (n = 55)	Major-Difficulties (n = 43)	Total Sample (N = 187)
Mean mother's age in years (SD)	31.5 (4.5)	31.8 (4.7)	32.9 (4.5)	31.6 (5.4)	32.0 (4.8)
Mean infant age in weeks (SD)	27.7 (5.6)	6.4 <sup>a</sup> (2.7)	28.3 (16.9)	35.8 (46.2)	24.7 (25.5)
Mean number of children	1.8 (.79)	1.2 <sup>b</sup> (.56)	1.3 <sup>b</sup> (.58)	2.0 (1.0)	1.5 (.8)
% of male index infants	55	57	63	61	60
% of married/defacto parents	92	98	96	90	94
% of mothers who have not completed a University or vocational course	11	5	9	8	8
Ethnic background (> 5% of total)	Australian—64%	Australian—54% British—7%	Australian—73% New Zealand—6%	Australian—57% Greek, Chilean, Chinese—5%	Australian—63%

<sup>a</sup> $F(3, 181) = 12.09, p < .0001$ . Least significant difference post hoc tests indicate early-intervention group < control, major-difficulties, and moderate-difficulties groups.

<sup>b</sup> $F(3, 183) = 10.62, p < .0001$ . Least significant difference post hoc tests indicate moderate-difficulties and early-intervention groups < control and major-difficulties groups.

the time in the other experimental groups, suggesting that defensive responding was not likely to be operating in the residential sample. The three excluded items were: "I can manage my baby's general care (e.g., bathing, changing nappy)," "My baby feels safe and secure with me," "My baby enjoys being with me." A separate criterion for exclusion of items was when the inter-item correlation between two items was greater than .75. For the remaining 15 items, all inter-item correlations were less than .61 ( $M = .23$ ;  $SD = .14$ ), resulting in no exclusions on this basis.

Items 1 and 9 have a *not applicable* response (this occurred in about 2% of participants). This response is scored as 2. This reflects the fact that in all groups in our sample, a significant number of participants (2–71%) scored below the maximum of 3 on these items.

## Factor Analysis

The factor structure of the KPCS was examined using principal components factor analysis, with a varimax rotation. There were no outliers, four cases of missing data were replaced with the mean score, and evaluation of assumptions was generally satisfactory, although some items showed moderate positive skewness. Sample size was adequate with 12.5 participants per item (Nunnally & Bernstein, 1994). The un-rotated principal components solution was composed of four factors with eigenvalues greater than 1 and explained 56.6% of the total variance. The more discriminating scree plot (Cattell, 1966) suggested a three-factor solution. The best structure interpretation was a three-factor specified solution with a varimax rotation. This solution explained 49.3% of the total variance and comprised a large first factor explaining 30.1% of the variance. Items were retained within a factor when a minimum factor load strength of .40 was achieved. One item (I am confident about helping my baby to establish a good sleep routine) loaded on both the first (.50) and second (.41) factors. This item was retained in the scale given its critical face validity regarding clients presenting to our service. The component loadings, communalities ( $h^2$ ), and percentage of variance explained after varimax rotation are shown in Table 4. Variables loading on component one addressed perceptions of parenting ability; component two, available parenting support; and, component three, perceptions about child development. These three factors were thus labeled *parenting, support, and child development*. Nevertheless, because the KPCS was designed to assess

**Table 4. Varimax Rotated Component Loadings for KPCCS Items**

Item	Factors			$h^2$
	1	2	3	
Understand baby's signals	.73	—	—	.64
Know what to do when baby cries	.72	—	—	.59
Soothe baby when distressed	.68	—	—	.57
Settle baby	.67	—	—	.55
Handling cold or minor illness	.63	—	—	.41
Playing with baby	.61	—	—	.37
Establish good sleep routine	.50	.41	—	.41
Make decisions about care of baby	.47	—	—	.40
Feel sure about support from others	—	.71	—	.51
Feel doing a good job as mother/father	—	.70	—	.63
Feel sure about support from partner	—	.60	—	.42
Other people believe doing a good job	—	.55	—	.36
Being a mother/father is very stressful	—	.55	—	.44
Baby is doing well	—	—	.76	.67
Feeding baby	—	—	.68	.49
% of variance	30.14	11.10	8.08	49.32
Label	Parenting	Support	Child development	

Note: Component loadings of less than .40 have been suppressed.

the unidimensional construct of PPSE, and given that factor score-to-total score correlations for the parenting, support, and child development factors were moderate-to-strong (i.e., .91, .73, and .47, respectively), the KPCCS was considered to provide a unidimensional measure with three underlying subscales.

### Scale Reliability

An internal consistency of greater than .70 is thought to be necessary for a new psychological scale (Nunnally & Bernstein, 1994). Cronbach's alpha for the KPCCS total score was .81. The parenting, support, and child development subscales had Cronbach's alphas of .80, .64, and .44, respectively. Twenty-seven clients in the control group completed the KPCCS 4 weeks after initial administration ( $M = 28$  days,  $SD = 10.39$  days). All of these clients reported no major stressors or changes during the period between first and second administrations. Test-retest reliability was  $r(26) = .88, p < .0001$ .

### Scale Validity

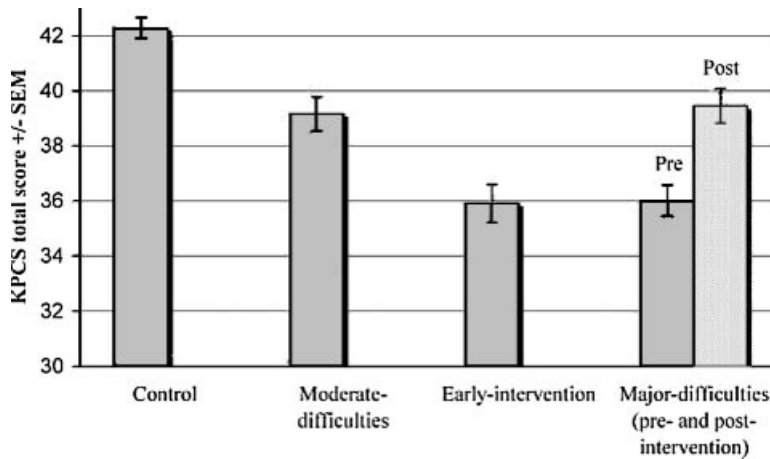
**Discriminant validity.** Discriminant validity of the KPCCS was established using two analyses. First, KPCCS total scores for the four experimental

groups were analyzed with a one-way analysis of variance (ANOVA). The ANOVA test assumptions were found to be satisfactory, excepting the homogeneity of variance assumption. Games-Howell tests were used to explore post hoc group differences. The ANOVA result was statistically significant  $F(3, 183) = 26.66, p < .0001$ . Post hoc comparisons revealed that the control group scored significantly higher (i.e., had greater PPSE) than the three clinical groups (all  $ps < .0001$ ). The moderate-difficulties group scored higher than the major-difficulties and early-intervention groups ( $ps < .005$ ). The major-difficulties and early-intervention groups did not have KPCCS scores significantly different from each another (see Fig. 1).

Discriminant validity was further explored by examining pre- and post-intervention KPCCS scores for clients attending a 5-day residential program using a dependent  $t$ -test. Assumptions of normality for this analysis were met. Results indicated a statistically significant difference between pre- and post-intervention scores,  $t(27) = 6.49, p < .0001$  (see Fig. 1), with higher scores post-intervention.

**Convergent validity.** Convergent validity was established by examining correlations between the KPCCS total and subscale scores, and scores on other dependant measures used in the study (see Table 5). KPCCS total scores were associated in the appropriate direction with (a) both the domain-





**FIGURE 1.** Total KPCS score by experimental group. Games-Howell post hoc tests indicate control > moderate-difficulties, major-difficulties, and early-intervention groups ( $p < .0001$ ), and moderate-difficulties > major-difficulties and early-intervention groups ( $p < .005$ ). Paired sample t-test indicates a significant difference between pre- and post-intervention scores for the major-difficulties group ( $p < .001$ ).

general and task-specific measures of PPSE, that is, the Parenting Sense of Competence Scale—Efficacy Subscale and the Maternal Efficacy Questionnaire; (b) parenting satisfaction as measured by the Parenting Sense of Competence Scale—Satisfaction Subscale; (c) depression as measured by the Edinburgh Postnatal Depression Scale; and (d) three indices from the Parenting Stress Index—Short Form, namely, total parenting stress, parental distress, and difficult child.

**Cut-off score and reliable change index.** The receiver operating characteristics of the KPCS were examined by contrasting the clients in the

major difficulties group (considered to be true cases of clinically low PPSE) with those in the control group (considered to be non-cases). A cut-off of 39 or less was found to be optimal. Using this cut-off, the *sensitivity* of the KPCS was 86% (i.e., the percentage of true cases correctly identified). The *specificity* was 89% (i.e., the percentage of non-cases correctly identified). The *positive predictive value* was 88% (i.e., the percentage of the sample scoring above the cut-off who were true cases). The *negative predictive value* was also 88% (i.e., the percentage of the sample scoring below the cut-off who were true non-cases).

**Table 5. Correlations Between KPCS Total and Subscale Scores and Other Dependent Measures**

	1	2	3	4
(1) KPCS total score				
(2) KPCS efficacy	.91**			
(3) KPCS support	.73**	.42**		
(4) KPCS growth	.47**	.29**	.20**	
(5) PSOC efficacy	.55**	.45**	.46**	.30**
(6) PSOC satisfaction	.56**	.40**	.56**	.28**
(7) MEQ	.62**	.56**	.42**	.22
(8) EPDS	-.56**	-.33**	-.62**	-.35**
(9) PSI-total	-.63**	-.41**	-.62**	-.19
(10) PSI-sf parental distress	-.68**	-.40**	-.68**	-.32*
(11) PSI-sf parent-child dysfunctional interaction	-.29	-.18	-.30*	-.06
(12) PSI-sf difficult child	-.39**	-.31*	-.37**	.02

*Note:* \*\*Correlation is significant at the  $< .01$  level (two-tailed); \*Correlation is significant at the  $< .05$  level (two-tailed). As indicated in Table 2, each experimental group completed a sub-set of questionnaires. Therefore, the sample size contributing to correlation coefficients presented varies and significance levels in the Table vary accordingly. KPCS, Karitane Parenting Confidence Scale; PSOC, Parenting Sense of Competence Scale; MEQ, Maternal Efficacy Questionnaire; EPDS, Edinburgh Postnatal Depression Scale; PSI-sf, Parenting Stress Index—short form.

Overall, only 12% of the sample was misclassified using a 39 or less cut-off.

The reliable change index (RCI; Jacobson & Truax, 1991) is thought to be a good method for calculating the number of points change required for a clinician to be confident that a difference in scores is not due to measurement error (Matthey, 2004). Using the formula,  $RCI = (\chi_2 - \chi_1) / S_{diff}$ , with an RCI of  $>1.96$ , indicating that the difference in scores is likely to be a real difference (95% confidence level), the RCI on the KPCS for those participants in the clinical groups was found to be six points. That is, for a given client, a change in KPCS score by six points or more indicates reliable change in their level of PPSE. When this change also moves the client from scoring 39 or less (i.e., below the cut-off on the KPCS) to 40 or more, that client can also be considered to be in the non-clinical range. Clients who score 39 or less, and whose KPCS score rises by six or more points but does not rise to a score of 40 or more, may be considered to have shown an improvement, but to still be in the clinical range.

## DISCUSSION

The KPCS was designed especially for use by practitioners and researchers working within a clinical setting with parents of infants up to 12 months old. An advantage of the KPCS over many available measures of PPSE for the parents of infants is that it is simple to administer, complete and score. Furthermore, the scale is grounded in self-efficacy theory, enabling further development and refinement of this construct and also permitting robust interpretation of data.

The KPCS showed acceptable internal validity and test-retest reliability. Factor analysis revealed a three-factor structure, composed of efficacy, support, and child development. This structure was consistent with our intention to highlight perceptions of social support within the KPCS, given both the critical nature of these perceptions in governing self-efficacy perceptions (Bandura, 1989) and the body of research highlighting the role of social support as a protective or resiliency factor in parents of young children (Cutrona & Troutman, 1986; Teti & Gelfand, 1991). A unidimensional total score can be derived for the KPCS and, until the validity of this factor structure is replicated and the internal consistency of the subscales are shown to be adequate, we would recommend using only the KPCS total score. Discriminant validity of the KPCS was excellent, with a control group of parents not presenting for

parentcraft assistance scoring higher (i.e., reporting greater PPSE) than the three clinical groups. The moderate-difficulties group scored significantly higher than the early-intervention and major-difficulties groups.

The early-intervention group contained infants who were significantly younger than infants in the major-difficulties group (mean infant age in weeks of 6.4 and 34.8 weeks, respectively). Several authors have suggested that PPSE may increase as a parent becomes more comfortable and skilled at parenting, that is, rise during the first several months of the infant's life and then plateau (e.g., Reece, 1992; Secco, 2002). Low PPSE in the early stages of parenting may, thus, be normative. Longitudinal research with the KPCS would help to define this progression, provide norms, and explore predictors of later low PPSE.

An examination of the KPCS' receiver operator characteristics indicated a cut-off of 39 or less. Thus, clients scoring 39 or less are likely to have clinically low PPSE. The RCI for the KPCS was calculated to be six points. To our knowledge, the KPCS is the first measure of its type to include empirically derived cut-off and reliable change data. The sensitivity to change of the KPCS was evidenced by a significant change in the major-difficulties group following a 5-day residential parentcraft admission. Such improvements are consistent with an emerging literature attesting to the efficacy of parentcraft hospital admissions (Don et al., 2002; Fisher et al., 2004). Key questions remain, for example, about whether such gains are maintained after the families have returned to their home environments and whether PPSE can be directly targeted in interventions.

Finally, the KPCS showed expected correlations with both domain general and task-specific measures of PPSE, as well as with parenting stress, satisfaction and depression, thereby supporting the instrument's construct validity and confirming previous research (Bugental et al., 1989; Cutrona & Troutman, 1986; Goodnow & Collins, 1990; Johnston & Mash, 1989; Teti & Gelfand, 1991). The similar values for correlations between task-specific and domain general measures of PPSE observed in our study (*rs* ranged from .55 to .62) warrant further investigation. A challenge is to delineate the extent to which these different measurement approaches tap different constructs (Coleman & Karraker, 2000). A good example of research addressing this issue was conducted by Lovejoy et al. (1997) who explored the convergent and discriminant validity of the Parenting Sense of Competence Scale (Gibaud-Wallston &

Wandersman, 1978) and the Parent Locus of Control Scale (Campis, Lyman, & Prentice-Dunn, 1986), two domain general scales. This type of research is critical in refining our understanding of these constructs and the inter-relationships between existing measures. Given the range of empirical and theoretical positions that have led to the development of current PPSE scales, such a consolidation would represent an important step in refining research efforts. In addition, as research advances in this area, future researchers could also comment on the degree of variability in outcomes accounted for by parenting confidence, that is, the size of effects exerted by this variable.

A limitation of the present study is that data were not collected from fathers. We are currently using and evaluating the KPCS with fathers within our clinical service, and have found the information collected is clinically useful and that fathers value the opportunity to have their opinions and feelings noted. Yet, further work is needed to determine the psychometric properties of the scale with this population. To date, no instrument has been developed specifically for fathers, despite the fact that fathers are increasingly viewed as buffers for mothers in distress (Field, 1998).

Once further refinement has occurred, the KPCS should prove useful in the assessment, screening, and evaluation of parents of infants requiring clinical services. An initial examination of psychometric properties of the KPCS suggests the instrument has acceptable reliability and validity and may be a sound and dependable measure of PPSE.

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