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ARTICLE

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Translation and preliminary validation of a Korean version of the parental reflective functioning questionnaire

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ABSTRACT

This study aimed to explore the factor structure, reliability, and validity of a Korean translation of the Parental Reflective Functioning Questionnaire (PRFQ). The PRFQ consists of three subscales: *prementalizing modes*, *certainty about mental states*, and *interest and curiosity in mental states*. A convenience sample of 163 Korean parents completed the K-PRFQ. Exploratory factor analysis showed three factors mapped on to the original PRFQ factors, but items from the original prementalizing modes subscale clustered into two additional factors. Data from a subsample ($n = 67$) showed that the certainty about mental states and interest and curiosity in mental states subscales correlated positively with more optimal self-reported parenting. We discuss the validity of using the PRFQ in collectivistic cultures.

KEYWORDS
cultural differences, parenting, parental reflective functioning, parental reflective functioning questionnaire

Parental reflective functioning (PRF) refers to a parent's capacity to represent their child's thoughts, feelings, and beliefs, and thus hold their child's mental experiences in mind (Slade, 2005). If parents can represent their child's subjective experiences without overwhelming or shutting down their own affective experiences, their child will have more opportunity to explore the subjective world through the parents' internal state representations (Luyten, Nijssens, Fonagy, & Mayes, 2017; Sharp & Fonagy, 2008; Slade, 2005). Such opportunities are assumed to allow children to understand their own and others' minds, and to encourage them to obtain broad self-knowledge, which is crucial in affect regulation (Slade, 2005). The present study provides a preliminary validation of a questionnaire measure of PRF in a sample of Korean parents.

PRF was originally assessed from responses to semistructured interviews, such as the Parent Development Interview (PDI; Aber, Slade, Berger, Bresgi, & Kaplan, 1985; Slade, Aber, Bresgi, Berger, & Kaplan, 2004) or the Working Model of the Child Interview (WMCI; Zeanah, Stevens, & Larrieu, 2014). Numerous studies reported that PRF was related to the intergenerational transmission of attachment and the quality of parenting behaviors. Slade, Grienenberger, Bernbach, Levy, and Locker (2005) found significant relations between maternal attachment measured by the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1996), PRF measured by the PDI, and infant–mother attachment measured by the strange situation procedure (Ainsworth, Blehar, Waters, & Wall, 1978). This study found that mothers with secure/autonomous AAI classifications were likely to show higher levels of PRF, and highly reflective mothers were more likely to have securely attached infants compared with mothers who had low levels of

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Key Findings and Implications

1. Our findings indicated that the structure of the Korean parental reflective functioning questionnaire (K-PRFQ) was different from the original PRFQ. Using exploratory factor analysis, a five-factor solution gave the most similar subscales to the PRFQ (i.e., prementalizing modes, certainty about mental states, and interest and curiosity in mental states). The two additional factors were not easily interpretable or theoretically consistent, but largely consisted of items intended to assess prementalizing modes. Cultural differences in expectations about parenting may help to explain why the additional factors were observed in the K-PRFQ.
2. The subscales of certainty about mental states and interest and curiosity in mental states in the K-PRFQ were generally related to optimal self-reported parenting styles: high warmth and low chaos. This suggests that not only mothers who have a genuine interest in their children's mental states, but also mothers who believe they can always read their infants' mental states, seem to perceive themselves as being more likely to be warm, and less likely to be chaotic and rejecting toward their infants.
3. The subscales of certainty about mental states and interest and curiosity in mental states in the K-PRFQ were both positively associated with cognitive empathy, while only the subscale of interest and curiosity in mental states was significantly associated with affective empathy. These findings suggest that while cognitive empathy may be sufficient for Korean mothers' certainty about their infants' mental states, both affective and cognitive facets of mentalizing may be necessary for Korean mothers' genuine interest in their infants' inner states.

Statement of relevance to the field

This study explored Korean parental mentalizing ability through the validation of the K-PRFQ. This study may help researchers in the field of infant and early childhood mental health to understand the interplay between culture, parents' representations of their children as individual mental agents, and their reflections on themselves in the caregiving role.

PRF. Although these findings remain to be replicated, this small-scale study provides preliminary evidence that maternal reflective functioning may mediate the relation between adult and infant attachment.

Using the same sample, Kelly, Slade, and Grienenberger (2005) found that maternal disruptive affective communication (Bronfman, Parsons, & Lyons-Ruth, 1999) during the strange situation procedure (e.g., silence in response to the infant's crying, redirecting the distressed infant to toys rather than offering physical comfort) was strongly correlated with low levels of PRF. This study suggests that low levels of PRF are related to problems in responding to infant emotions in a situation designed to activate the infant's attachment behaviors.

Stacks et al. (2014) also reported significant associations between parenting behaviors and PRF. This study found that highly reflective mothers showed higher parenting sensitivity and lower parenting negativity (e.g., negativity/hostility, overcontrolling/intrusiveness). The authors also found that parenting sensitivity mediated the link between PRF and infant–mother attachment security, after controlling for maternal risk factors such as postpartum depression and post-traumatic stress disorder. Although replication is once again required, these findings suggest that mothers' successful representation of their infants' mental states seems to be associated with secure infant–mother attachment and higher maternal emotional availability.

However, there are drawbacks to interview-based assessments of PRF. In addition to labor-intensive transcription, substantial training is required to code PRF from these interviews. To address these limitations, PRFQ (Luyten, Mayes, Nijssens, & Fonagy, 2017) was developed to enable researchers to assess PRF in an easy-to-administer self-report format. The PRFQ consists of 18 items on a 7-point Likert scale, and can be completed by parents with children aged up to 5 years. It has three subscales (i.e., prementalizing modes, certainty about mental states, and interest and curiosity in mental states), and each subscale has six items. With the subscales, the PRFQ offers broad information about PRF, including reasons for failures in PRF (the PRFQ items and scoring are available at: www.ucl.ac.uk/psychoanalysis/research/parental-reflective-functioning-questionnaire-prfq).

Luyten, Nijssens et al. (2017) proposed that there were three ways in which parents generally failed to enter their children's internal subjective world. Firstly, parents could interpret their children's behaviors with reference to distorted and malevolent attributions (e.g., "When my child is

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fussy, he or she does that just to annoy me"). Secondly, parents could have problems dealing with the opacity of mental states, being either overly confident about interpreting their children's mental states or showing little awareness of the existence of their children's mental states. Finally, they could show limited genuine interest and curiosity in their children's mental states, and thus a lack of understanding of what occurs in their children's subjective world. According to Luyten, Nijssens et al. (2017), these three failures to appreciate the child's mental world often occur together. The three subscales of the PRFQ—prementalizing modes, certainty about mental states, and interest and curiosity in mental states—reflect this theoretical background. It is important to note that higher scores on each of scales do not always reflect higher PRF. For example, a high level of certainty about mental states (e.g., "I can completely read my child's mind") does not necessarily mean a high level of PRF because high scores indicate a lack of awareness of the opacity of mental states.

Although few studies have used the PRFQ, the findings from these studies are broadly in line with those of studies which assessed PRF using semi-structured interviews. For example, Rostad and Whitaker (2016) investigated associations between PRFQ, the quality of parenting, and parent–child relationships by measuring parental involvement, parent satisfaction, and parental support. These researchers found that high scores for prementalizing modes of PRF showed the most consistent relations with nonoptimal parenting, such as low parental satisfaction, parental rejection, and low allowance of autonomy, whereas the interest and curiosity in mental states subscale was positively associated with positive parenting experiences, such as parental support and parental satisfaction. Although all measurements were self-report questionnaires, and there were no observational data on the interaction between parents and children, the study provides preliminary evidence on the associations between the facets of parental reflective functioning as assessed by the PRFQ and the perceived quality of parenting. Therefore, further work utilizing the PRFQ is important to validate its use and to explore its relation to other aspects of parenting.

Currently, little is known about the extent to which sociocultural context influences PRF. It is likely that cultural factors could affect parents' child-rearing beliefs, parenting styles, and behavior. The present study chose to investigate PRF in the context of South Korean culture. South Korea is a collectivistic society based on Confucian values, in which parents are expected to be aware of and fulfil their children's requirements from birth, and where children are expected to show filial piety to their parents. This emphasizes a sense of "oneness"—strong emotional relatedness between mother and infant—in parent–child relationships, rather than parents treating their children and themselves as individuals (Jin, Jacobvitz, Hazen, & Jung, 2012; Kim & Choi, 1994; Kim, Park, Kwon, & Koo, 2005). Lieber, Fung, and Leung (2006) reported that Hong Kong and Taiwanese parents, who also live in a Confucian collectivistic culture, believe that "shame" is an important emotion for fostering children's social sensitivity. This should be understood in the context of collectivistic society, where displaying appropriate behavior and expressions in social settings is a component of moral evaluation. These different approaches to rearing children in these cultures could potentially affect both PRF itself and its associations with parental variables (e.g., parenting style), as some of the concepts described in the PRF literature (e.g., the opacity of mental states; limitations on insight) may be viewed quite differently in a collectivistic society.

Although previous research has not attempted to translate the PRFQ directly into Korean, Shin and colleagues (Shin, 2016; Shin, Lee, & Yoo, 2015) developed their own measure of Korean parents' reflections on parenting their young children. Shin et al. (2015) interviewed 13 experts and practitioners working in the area of developmental psychology in Korea to devise the questionnaire items and administered the resulting 20-item questionnaire to a large sample of Korean parents. In reporting on the questionnaire's structure, the authors defined three factors: (a) understanding of children (e.g., "I understand my child's play or behavior"), (b) understanding of parent's role (e.g., "Thinking about my behavior toward my child, I can realize my unknown anxiety"), and (c) behavior recognition (e.g., "I cannot suppress my anger when my child grumbles"). Shin (2016) validated the new questionnaire against published measures of adult mentalization (e.g., Korean self-relation scale, Hwang, 2011; Korean difficulties in emotional regulation scale, Cho, 2007). Shin reported that all three factors were positively related to self-relation scores, implying greater reflection on parenting was associated with better self-awareness. Scores on the understanding of children and behavior recognition factors were related to parents reporting fewer emotion regulation difficulties.

There are several notable differences between this Korean questionnaire and the PRFQ. The Korean questionnaire did not include items probing parents' comprehension of the nature of their children's mental states (i.e., the parent's stance on the opacity or transparency of mental states), or parents' potential misinterpretations of their children's behaviors. Rather, items on the questionnaire focused on parents' level of awareness of their own feelings and thoughts in different parenting contexts. Furthermore, the questionnaires against which this new measure was validated did not focus on parenting or the parent–child relationship, but on adult mentalization. As Luyten, Nijssens et al. (2017)

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pointed out, adult reflective functioning is not identical to parental reflective functioning, and thus the question of how responses on this Korean questionnaire relate to parenting behaviors or the parent–child relationship remains unanswered.

The main aim of the present study was to translate the PRFQ into Korean and explore the factor structure in the Korean version of the PRFQ (K-PRFQ) using both confirmatory factor analysis (CFA), and exploratory factor analysis (EFA). In addition to exploring whether the three-factor structure held for the K-PRFQ, the present study investigated the reliability of the K-PRFQ and elements of convergent validity, through studying associations between the K-PRFQ and self-reported parenting style and parenting stress. Slade (2005) argued that mentalization integrates cognitive and affective ways of knowing. This is akin to empathy in terms of understanding and fully experiencing others' emotions. A preliminary study of the PRFQ reported a significant correlation between prementalizing modes and symptomatic distress (Luyten, Mayes et al., 2017). Measures of empathy and mental health were therefore also included in the present study.

Given that there are different approaches to parenting in collectivistic versus individualistic cultures, we explored whether the original three-factor structure held for the K-PRFQ. In terms of convergent validity, based on previous findings using the PRFQ, we hypothesized that (a) the prementalizing modes subscale of the K-PRFQ would relate to reported adverse parenting style (e.g., rejection), (b) the interest and curiosity in mental states subscale would relate to positive parenting style (e.g., autonomy support), but (c) no specific relations were expected with respect to the subscale of certainty about mental states. As a further test of convergent validity, relations between K-PRFQ responses and self-reported parenting stress, empathy, and mental health were explored.

1 | METHOD

1.1 | Participants and procedures

Participants were 234 parents who were recruited via parenting websites in Korea between October 2018 and February 2019 and completed the measures online. Participants were excluded from analyses for the following reasons: 75 parents consented to take part but did not answer any of items on the questionnaires, 55 parents reported their children were over 6 years old, and 8 parents did not provide their children's ages, leaving a sample of 96 with children 0 to 5 years of age (M = 2.56 years, SD = 1.46). Additionally, 67 respondents with children aged under 12 months (M = 7.56 months, SD = .10, range = 4.23-10.63 months) were recruited for a face-to-face research study and completed the K-PRFQ in the developmental laboratory. Thus, a complete data set for the factor analysis was available for 163 (8 fathers) Korean parents. Majority of the parents were 30–39 years (77.9%), with ages ranging between 20 and 49 years, and educated to degree level or above (88.3%). The distribution of education level was equivalent to the general education level of Koreans aged 25–34 (OECD, 2018). The procedure was approved by the relevant University ethics committee.

1.2 | Materials and method

Participants who completed the measures online were provided with information on the study via Korean parenting websites. Once they agreed to participate, they followed a link to access the study information, consent form, and the Korean version of the PRFQ (K-PRFQ). The subsample of 67 Korean parents (all mothers) who attended the session in the developmental laboratory completed other questionnaires in addition to the K-PRFQ, administered in the order described below. The subsample also completed additional testing procedures to assess parent–child interaction (not reported here).

1.3 | Korean parents as social context questionnaire

The Parents as Social Context Questionnaire (PSCQ; Skinner, Johnson, & Snyder, 2005) assesses the self-reported quality of multiple aspects of parenting style. The present study used the adapted Korean version of the PSCQ (K-PSCQ) (Egeli, Rogers, Rinaldi, & Cui, 2015; Jeong & Shin, 2011). Overall, the questionnaire comprises 30 items, for which respondents are asked to evaluate the extent to which they agree with a given statement about parenting on a 4-point Likert scale ranging from 1 (not at all true) to 4 (very true). The K-PSCQ contains six subscales: (a) warmth (e.g., "I set aside time to talk to my child about what is important to him/her"); (b) rejection (e.g., "At times, the demands that my child makes feel like a burden"); (c) structure (e.g., "I expect my child to follow our family rules"); (d) chaos (e.g., "When my child gets in trouble, my reaction is not very predictable"); (e) autonomy support (e.g., "I trust my child"); and (f) coercion (e.g., "My child fights me at every turn"). Each subscale's score ranges between 5 and 20, and higher scores on each subscale indicate greater levels of the corresponding parenting in that area. Internal reliabilities were as follows: warmth α = .78, rejection α = .67, structure α = .69, chaos α = .60, autonomy support α = .63, and coercion α = .78.

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1.4 | Korean questionnaire of cognitive and affective empathy

The Korean questionnaire of cognitive and affective empathy (K-QCAE; Kang, 2013) is a translated Korean version of the questionnaire of cognitive and affective empathy (QCAE; Reniers, Corcoran, & Drake, 2011). It has 31 items based on a 4-point Likert scale (1: Strongly disagree to 4: Strongly agree). The questionnaire consists of two subscales: cognitive empathy and affective empathy. Cognitive empathy measures the extent to which participants are able to construct a working model of the emotional states of others, combining (a) perspective taking (e.g., "I can pick up quickly if someone says one thing but means another") and (b) on-line simulation (e.g., "Before I do something I try to consider how my friend will react to it"). Affective empathy indexes the ability to be sensitive to and vicariously experience another person's feelings, and consists of (a) emotion contagion (e.g., "I am inclined to get nervous when others around me seem to be nervous"), (b) proximity responsivity (e.g., "I often get emotionally involved with my friends' problems"), and (c) peripheral responsivity (e.g., "I usually stay emotionally detached when watching a film"). Total scores for the cognitive empathy and affective empathy subscales were used. Internal reliability for cognitive empathy was $\alpha = .87$, and for affective empathy it was $\alpha = .73$ with the current sample.

1.5 | Korean parenting stress index-short form

The K-PSI-SF (Lee, Chung, Park, & Kim, 2008) is a translated Korean version of the parenting stress index-short form (Abidin, 1990). It consists of 36 items based on a 5-point Likert scale (1: strongly disagree to 5: strongly agree) that measures the level of parenting stress. The measurement consists of three subscales: parental distress (PD), parent–child dysfunctional interaction (P-CDI), and difficult child (DC). PD focuses on the distress of functioning in the parental role, while P-CDI focuses on the gap between a parent's expectation of the child and the real parent–child interaction. DC assesses perceptions of child characteristics, including whether the child is easy to manage from the caregiver's point of view. Each subscale's score ranges from 12 to 60, and the items were scored such that a low raw score indicates a low level of stress related to parenting. The total score of the three subscales indicates the overall level of parenting stress, and it ranges from 36 to 180. This measure had high internal reliability with the current sample (PD $\alpha = .81$, P-CDI $\alpha = .73$, DC $\alpha = .83$, and total score $\alpha = .88$). This study used the total score of parenting stress.

1.6 | Korean hospital anxiety and depression scale

The Korean hospital anxiety and depression scale (K-HADS; Oh, Min, & Park, 1999) is a 14-item self-report questionnaire to measure anxiety and depressive symptoms. Items have a 4-point Likert scale ranging from 0 to 3. Each of the two subscales has a range between 0 and 21, and the total score range is 0–42. A higher score indicates a greater level of anxiety/depressive symptoms. This measure is known to have a good reliability and validity internationally, including the Korean version (Bjelland, Dahl, Haug, & Neckelmann, 2002; Kang et al., 2016). The total score of the measure was used; reliability for the current sample was $\alpha = .87$.

1.7 | Korean version of the PRFQ

Permission to translate the PRFQ was obtained from one of the authors (Patrick Luyten). The translation of the PRFQ closely followed the guidelines of a case report of valid questionnaire translation (Su & Parham, 2002). To achieve equivalence between the Korean version of the PRFQ and the original version of PRFQ, four bilingual translators (who understood both languages, as well as cultural considerations) and two monolingual reviewers were involved in the translation process. Initially, two Korean–English bilingual speakers translated the PRFQ into Korean. They were native speakers of Korean and had completed postgraduate study in developmental psychology. All comments and suggestions about the cultural translation of the PRFQ were discussed via email and phone. After a consensus was reached for the initial translated version of the PRFQ, another pair of Korean–English bilingual speakers translated it into English from Korean (i.e., back-translation). The back-translators were native speakers of Korean who were not experts in developmental psychology, and thus it was assumed that their level of understanding of the questionnaire was similar to Korean mothers. When they finished their back-translations separately, difficult items for translation were discussed and a consensus was reached on one version of the back-translated questionnaire.

A monolingual reviewer who spoke English as a native language and was experienced in developmental psychology reviewed the back-translated version and found subtle differences in words that may have inferred different

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TABLE 1 Descriptive statistics for all variables

	M (*SD*)	Range
K-PRFQ (n = 163)		
Prementalizing modes	2.27 (.80)	1–5.33
Certainty about mental state	4.69 (1.05)	1.67–7
Interest and curiosity in mental states	5.98 (.77)	2.83–7
K-QCAE (n = 67)		
Cognitive empathy	56.85 (6.41)	41–74
Affective empathy	34.36 (4.49)	24–42
K-PASCQ (n = 67)		
Warmth	17.16 (2.42)	11–20
Rejection	9.79 (2.92)	5–18
Structure	15.36 (2.46)	10–20
Chaos	8.55 (2.41)	5–13
Autonomy support	17.27 (2.03)	13–20
Coercion	8.33 (2.58)	5–14
K-PSI-SF (n = 67)	74.84 (17.46)	36–113
K-HADS (n = 67)	13.58 (4.76)	6–24

Note. K-PRFQ, Korean Parental Reflective Functioning Questionnaire; K-QCAE, Korean Questionnaire of Cognitive and Affective Empathy; K-PASCQ, Korean Parents as Social Context Questionnaire; K-PSI-SF, Parental Stress Index-Short Form; K-HADS, Korean Hospital Anxiety and Depression Scale.

meanings to respondents of the questionnaire, and thus minor modifications were made to the Korean translated version. Lastly, the Korean version of the PRFQ was administered online to a pilot sample of four Korean mothers, who had at least one child aged 5 years or under. This step aimed to refine the questionnaire by gaining opinions from the target population. The suggestions from the mothers were considered when making the final revision. Participants rated each of the 18 items in the K-PRFQ using the 7-point scale.

2 | RESULTS

2.1 | Descriptive statistics

Descriptive statistics for all variables are shown in Table 1. Kolmogorov–Smirnov tests indicated nonnormal distribution for the following variables: K-PSCQ warmth, K-PSCQ chaos, K-PSCQ autonomy support, K-PSCQ coercion, K-QCAE cognitive empathy, K-PRFQ certainty about mental states, and K-PRFQ interest and curiosity in mental states. Nonparametric correlations (i.e., Spearman's rho) are therefore reported for analyses involving these variables.

2.2 | Confirmatory factor analysis for K-PRFQ

Confirmatory factor analysis (CFA) was used to test whether the same three-factor model reported for the PRFQ (Luyten, Mayes et al., 2017) also fitted the K-PRFQ data. The following criteria of fit indices were used: the model chi-square (χ^2), the root mean square error of approximation (RMSEA), the comparative fit index (CFI), and the nonnormed fit index (NNFI). Given the small sample size of the current study and nonnormality of most of the variables, the Satorra–Bentler scaled chi-square (SB χ^2) statistic (Satorra, & Bentler, 1990, 1991) was calculated (Hu & Bentler, 1999). A model in which the χ^2 value is not significant, RMSEA < .08, CFI ≥ .90, and NNFI ≥ .95 is considered to be a good fit (Parry, 2017). CFA was conducted using AMOS 25.0 (IBM Corporation, NY). The SB χ^2 statistic was conducted using STATA 15.1 (Stata Corporation, TX).

The three-factor solution appeared not to be a good fit: χ^2 = 359.94, df = 132, p < .001; RMSEA = .10 (90% confidence interval [CI] [.09, .12]); CFI = .77; NNFI = .74. Although modification was conducted to improve goodness of fit as the modification indices suggested, fitness of the model was not substantially improved; χ^2 = 292.21, df = 125, p < .001; RMSEA = .10 (CI [.08, .10]); CFI = .83; NNFI = .80. The SB χ^2statistic also showed that the three-factor structure was not a good fit for the K-PRFQ: SB χ^2 = 302.24, df = 132, p < .001; SB_RMSEA = .09; SB_CFI = .79; SB_NNFI = .76, suggesting the modified model fit the data best in the current sample. Figure 1 presents the modified model. As shown in Figure 1, three items loaded nonsignificantly (p < .001) onto the latent prementalizing modes factor (item 1, β = .07, p = .473; item 4, β = .12, p = .189; item 13, β = .29, p = .002). Removing these three items did not improve the fit of the model. Apart from these items, all items were substantially and significantly loaded onto their respective factors.

Estimate internal reliabilities (Cronbach's alpha) of the original three subscales were .45, .86, and .79 for the subscales of prementalizing modes, certainty about mental states, and interest and curiosity in mental states. In line with the CFA results, the internal reliability of certainty about mental states and interest and curiosity in mental states was in accordance with the validation study of the PRFQ, while the internal reliability of prementalizing modes was lower than on the original PRFQ (prementalizing modes, .70; certainty about mental states, .82; interest and curiosity in mental states, .75; Luyten, Mayes et al., 2017).

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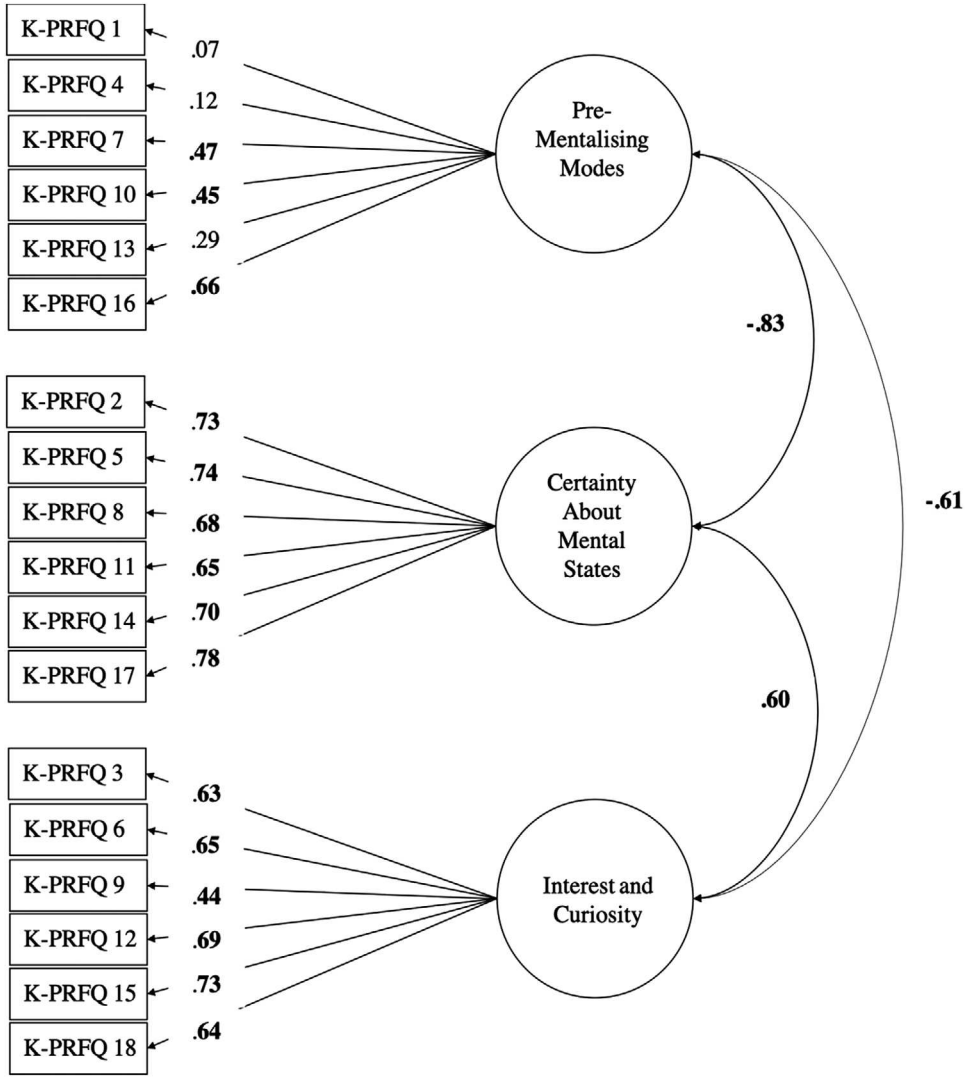

FIGURE 1 Standardized loading in the CFA for the three-factor model of the PRFQ. Residuals and correlations between residuals are omitted for clarity of presentation. Rectangles indicate measured variables and circles presents latent constructs. Bold estimates are statistically significant

2.3 | Exploratory factor analysis

Given the results of the CFA, follow-up exploratory factor analysis (EFA) was used to explore the data further. According to Schmitt (2011), EFA can be used to (a) explore poorly fitting CFA models, (b) explore factor structures without strong hypotheses, and (c) confirm a factor structure based on strong hypotheses when the independent cluster assumption of CFA is unrealistic. EFA was conducted with principal axis factoring with promax rotations. Principal factor analysis is often used when the goal of analysis is to detect structure (Muca, Puka, Bani, & Shahu, 2013). To identify the number of factors, the following criteria were used: (a) the number of components with an eigenvalue > 1, (b) the scree test, and (c) the interpretability of the factor solution. The main loading of an item on a factor had to be greater than 0.3 (Field, 2013). The result of the Kaiser–Meyer–Olkin measure of sampling adequacy, KMO = .84, and Bartlett's test of sphericity, approximate χ^2 (153) = 1105.77, $p < 001$, verified EFA was appropriate for the current study's sample. Five eigenvalues were greater than 1 (5.64, 2.23, 1.49, 1.25, and 1.06), and scree tests indicated three prominent factors.

Given these results, the pattern matrices for three, four, and five factors were considered, and the five-factor solution provided the most similar factor structure to the PRFQ (Luyten, Mayes et al., 2017). In the five-factor solution, the first factor consisted of all six items intended to assess certainty about mental states, and the second factor consisted of five items intended to assess interest and curiosity in mental states. The third factor consisted of three

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TABLE 2 Pattern matrix: Exploratory factor analysis of the K-PRFQ

17 Item ($n = 163$)	Rotated factor loading				
	1: Certainty about mental states	2: Interest and curiosity in mental states	3: Pre-mentalizing modes	4	5
I always know what my child wants.	.87				
I can completely read my child's mind	.84				
I can always predict what my child will do	.77				
I always know why my child acts the way he or she does	.68				
I always know why I do what I do to my child	.60				
I can sometimes misunderstand the reactions of my child	.55		−.32		
I wonder a lot about what my child is thinking and feeling		.76			
I am often curious to find out how my child feels.		.73			
I try to understand the reasons why my child misbehaves.		.59			
I like to think about the reasons behind the way my child behaves and feels.		.54			
I try to see situations through the eyes of my child.		.48			.41
My child sometimes gets sick to keep me from doing what I want to do.			.94	−.36	
Often, my child's behavior is too confusing to bother figuring out.	−.39		.47		
When my child is fussy he or she does that just to annoy me			.42	.31	
The only time I am certain my child loves me is when he or she is smiling at me.			−.33	.83	
I believe there is no point in trying to guess what my child feels				−.42	
My child cries around strangers to embarrass me					.56
Eigenvalues	5.64	2.23	1.49	1.25	1.06
% of variance	31.35	12.41	8.25	6.96	5.91

Note. This table shows pattern coefficients.

[a]Indicates items to be reversed scored when summing subscales.

items intended to assess prementalizing modes. The fourth factor consisted of two items; one item intended in the original PRFQ to measure prementalizing modes and the other item intended to measure interest and curiosity in mental states. Lastly, one item intended to measure prementalizing modes loaded to the fifth factor. Only one item intended to assess prementalizing modes (i.e., "I find it hard to actively participate in make believe play with my child") did not load onto any factors. Overall, six items cross-loaded on two factors, and four of them were intended to assess prementalizing modes. In conclusion, the five-factor solution seemed to provide the three factors that were akin to the original subscales of the PRFQ (i.e., prementalizing modes, certainty about mental states, and interest and curiosity in mental states), with additional factors that mainly consisted of the items intended to assess the prementalizing modes subscale (see Table 2).

Estimated internal reliabilities (Cronbach's alpha) were .86, .77, and .51 for the first (certainty about mental state), second (interest and curiosity in mental states), and third factors (prementalizing modes). The fourth factor was .22, and the fifth factor's internal reliability was not analyzed because of the limited item numbers.

2.4 | Relations between Korean PRF and parenting styles

As items intended to assess prementalizing modes in the K-PRFQ were separated into several factors in the factor analysis, and the internal reliability of that subscale was low in this sample, the subscale of prementalizing modes in the K-PRFQ was excluded from the correlation analyses. Given the high internal reliability of the original subscales of certainty about mental states and interest and curiosity

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TABLE 3 Correlations among the K-PRFQ subscales and parenting style ($n = 67$)

	K-PASCQ: Warmth	K-PASCQ: Rejection	K-PASCQ: Structure	K-PASCQ: Chaos	K-PASCQ: Autonomy support	K-PASCQ: Coercion
CMS	.64**	−.31*	.24*	−.42*	.21	−.28*
IC	.46**	−.13	.10	−.28*	.29*	−.13

*$p < .005$ (two-tailed),

**$p < .001$ (two-tailed)

Note. CMS, Certainty about mental states in the K-PRFQ; IC, Interest and curiosity in mental states in the Korean Parenting Reflective Functioning; K-PASCQ, Korean Parents as Social Context Questionnaire.

in mental states, we used the items for the original subscales to explore relations with maternal variables.

As shown in Table 3, the certainty about mental states subscale was positively correlated with warmth and structure, and negatively correlated with rejection, chaos and coercion. Considering oneself certain about the mental states of one's infant was thus associated with reporting optimum parenting styles. Similarly, the interest and curiosity in mental states subscale was related to greater warmth, autonomy-supportive parenting style, and less chaotic parenting styles. Interest in one's infant's mental states was therefore associated with reporting optimum parenting styles.

2.5 | Relations between Korean PRF and empathy

Cognitive empathy was positively correlated with certainty about mental states, $rs(65) = .52$, $p < .001$, and interest and curiosity in mental states, $rs(65) = .44$, $p < .001$. Affective empathy was positively correlated with interest and curiosity in mental states, $rs(65) = .24$, $p = .048$, but was unrelated to certainty about mental states, $rs(65) = .12$, $p = .344$.

2.6 | Relations between Korean PRF and parenting stress

The certainty about mental states subscale was associated with less reported parenting stress, $rs(65) = -.46$, $p < .001$. The interest and curiosity in mental states subscale was not related to reported parenting stress, $rs(65) = -.19$, $p = .118$.

2.7 | Relations between Korean PRF and mental health

Reported depressive/anxious symptoms were negatively correlated with certainty about mental states, $rs(65) = -.27$, $p = .027$, but unrelated to interest and curiosity in mental states, $rs(65) = -.01$, $p = .938$.

3 | DISCUSSION

The aim of the present study was to explore the factor structure of the K-PRFQ and to provide preliminary evidence on its reliability and validity. Our findings indicated that the structure of the K-PRFQ was different from the original PRFQ. Results obtained using the confirmatory and exploratory factor analyses showed that the three-factor solution from the original PRFQ was not appropriate for the K-PRFQ. With the exploratory factor analysis, a five-factor solution gave the most similar subscales to the PRFQ (i.e., prementalizing modes, certainty about mental states, and interest and curiosity in mental states). The subscales of certainty about mental states and interest and curiosity in mental states had good internal reliabilities, but the prementalizing modes subscale had poor internal reliability, and consisted of three items, two of which indicated parents' malicious attributions towards their children ("My child sometimes gets sick to keep me from doing what I want to do"; "When my child is fussy, s/he does that just to annoy me").

The two additional factors were not easily interpretable or theoretically consistent, but largely included items from the prementalizing modes subscale. The fourth factor consisted of two items intended to assess a lack of ability to enter the children's subjective experience (e.g., "The only time that I'm certain my child loves me is when s/he is smiling at me", "I believe there is no point in trying to guess what my child feels"). The latter item was intended in the original PRFQ to assess interest and curiosity in mental states, but this two-item fourth factor in the K-PRFQ appears to assess parents' uncertainty about their children's mental states. The poor internal reliability of items intended to assess prementalizing modes had also been observed in Shin and colleagues' (Shin, 2016; Shin et al., 2015) previous research on PRF in Korean parents. Considering that both the previous Korean research and the present preliminary K-PRFQ validation study found low reliability in the items about prementalizing modes, it appears that PRF in Korean parents may be subtly different from Western parents in relation to this aspect of parental mentalization. Future research should explore

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how to assess parents' inability or unwillingness to consider the child's thoughts and feelings in a manner appropriate for collectivistic cultures.

The fifth factor consisted of a single item: "My child cries around strangers to embarrass me". Interestingly, this is the only item in the PRFQ that involves a third party. Its failure to cohere with other items in the K-PRFQ may be indicative of collectivist cultures' sensitivity to others' emotions (Lau, Fung, Wang, & Kang, 2009). Considering that Korea is a collectivistic culture emphasizing relational sensitivity (i.e., caring about others' thoughts and feelings), the item may access parents' concerns about others' judgements on their parenting. Therefore, evaluating the situation of their children crying around strangers may reflect Korean parents' relational sensitivity in social situations, rather than their parental reflective functioning skills. As a result, the item may index a different trait from other items of the K-PRFQ, hence the finding that it loaded onto a fifth factor. Future cross-cultural research could generate additional items designed to access relational sensitivity in order to explore this possibility further.

Turning to convergent validity and the associations between the K-PRFQ and the other self-report measures that were investigated in a subsample of the participants, the subscales interest and curiosity in mental states related to optimal self-reported parenting styles. It was positively associated with reported warmth and negatively related to reported chaotic parenting style. The interest and curiosity in mental states subscale was also associated with both cognitive and affective empathy. Cognitive empathy indicates the extent to which the individual is able to construct a working model of the emotional states of others, whereas affective empathy indexes the ability to be sensitive to and vicariously experience another person's feelings. The observed relations thus suggest that mothers' interest in their infants' internal states is associated with the tendency not merely to represent others' emotions at the cognitive level, but to be emotionally affected oneself by others' feelings. This is in line with Borelli et al.'s (2020) study that presented positive correlations between interview-based reflective functioning and empathy for mothers who had school-aged children. Although the measures in their study did not embrace multidimensional facets of PRF and empathy, the findings suggested that mothers' representations of their children's mental states might relate to their empathic skills in the context of parenting.

The second subscale certainty about mental states was positively related to reported warmth and negatively related to reported chaotic parenting style. Furthermore, it was also negatively related to reported rejection and coercion in parenting style. This suggests that mothers who tend to report being certain about their infants' mental states seem to perceive themselves as being more likely to be warm, and less likely to be chaotic, rejective, and coercive toward their infants. With respect to relations with reported empathy, certainty about mental states was positively associated with cognitive empathy; when Korean mothers reported themselves to have a strong capacity to understand others' emotional perspectives at a cognitive level, they were more likely to report high certainty about their infants' internal states. This suggests that Korean parents' tendency not to acknowledge the limits of their insight and understanding in relation to their children's minds may stem from a more general certainty about others' feelings and emotional reactions. It would be interesting for future research to investigate the pattern of scores on the certainty about mental states cross-culturally to establish whether Korean parents are more likely than their Western counterparts to score highly on this aspect of PRF.

Interest and curiosity in mental states is proposed to be the key aspect of PRF (Luyten, Mayes et al., 2017); it is therefore not surprising that scores on this subscale were related to more optimal reported parenting. However, it is interesting that scoring highly on being certain about one's infant's mental states also related to optimal reported parenting and lower reported parenting distress. The observed associations may be because mothers with high scores in the certainty about mental states subscale tend to think that they can always read their infants' internal states, and are therefore likely to be confident about their parenting abilities, regardless of the accuracy of their representations. The fact that this subscale was also negatively correlated with reported parenting stress, indicating that certainty was associated with mothers reporting little difficulty in dealing with their infants, is in line with this proposal. As discussed previously, in Korean collectivistic society, mothers have a strong sense of oneness and emotional relatedness in parent–child relationships, feeling intrinsically attached to their children as extensions of themselves (Jin et al., 2012; Kim & Hoppe-Graff, 2001; Kim et al., 2005; Park & Kim, 2006). This parenting perspective is thought to promote family cohesion under the Confucian principle of filial piety (Kim et al., 2005; Park & Kim, 2006). In this cultural context, achieving oneness and emotional relatedness could involve a sense of knowing implicitly what children think, feel, and need. Therefore, the sense of being certain about their children's mental states may be highly valued and expected of mother, and thus socially desirable in Korean culture. Sensitivity to socially desirable aspects of parenting may thus explain the observed positive relation between the certainty about mental states subscale and reported parenting style.

However, it is important to be cautious in interpreting the meaning of this association between reporting

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certainty about one's infant's internal states and more optimal self-reported parenting. Although Korean society may value and expect parents to have certainty about and mastery over their young children's thoughts and feelings, this does not mean that such certainty and mastery represent optimal parenting; cultural values and expectations do not necessarily accord with views on what represents "good" or "bad" parenting. For example, adolescents in Korea have reported traditional Korean mothering to be "hostile" and "rejecting" (Kim & Hoppe-Graff, 2001). Furthermore, this cultural value of certainty may inhibit an important element of PRF—the tendency to wonder and experience doubt about an individual child's mental states and to understand that people can hide their mental states from each other (Fonagy, Target, Steele, & Steele, 1998). In the absence of observational data, it is thus not possible to understand how Korean parents' certainty about their infants' internal states relates to the quality of parent–infant interaction. Indeed, such limitations in the ability to establish how the different subscales of the PRFQ relate to actual parenting on the basis solely of self-report measures was noted by Rostad and Whitaker (2016). Future research should therefore assess parenting with observational measures to investigate how cultural variation in certainty about mental states and the other aspects of PRF relate to parents' behavior during actual parent–child interaction. Taking observational measures of infant temperament would also be useful in exploring how high scores on the different PRFQ subscales relate to child characteristics across different cultures.

The results of the present study should be interpreted in light of a number of important points. First, the participating parents were somewhat homogeneous in terms of age and educational level. Second, we did not collect data on various demographic factors, such as duration of the parent's relationship with their partner. According to Luyten, Mayes et al.'s (2017) study, relationship duration was positively related to the interest and curiosity in mental states subscale, and these authors suggested that the quality of the parent's romantic relationship could influence the quality of PRF towards their children. Third, we used the dispositional empathy questionnaire to explore the relation between PRF and general mentalizing, but future research could explore how empathy specifically in the parent–child relationship relates to PRF. Fourth, some subscales of the questionnaire used to assess parenting style (in particular chaos and autonomy support) had somewhat low levels of internal reliability. Data involving these scales should therefore be treated with a degree of caution. Finally, given that this study is the first to use the K-PRFQ, further research to validate this new measure is required. For example, investigating how cultural differences in relational sensitivity relate to responses on the PRFQ will enable future research to distinguish cultural expectations about parenting from prementalizing aspects of PRF. Such research would help extend research on parental mentalization beyond the boundaries of Western culture. This would enable researchers to investigate important questions relating to the interplay between culture, parents' representations of their children as individual mental agents, and their reflections on themselves in the caregiving role.

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CONFLICT OF INTERESTS

The authors declare no conflict of interest.

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