

A Social Computing based Subjective Perception Analysis on Maternal Identity

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Abstract. The purpose of this study is to identify the types of subjectivity of the perception towards the maternal identity by using the Q-methodology to investigate the perception of maternal identity of primiparous mothers raising infants, and examine their characteristics. This exploratory study applied Q-methodology, which focuses on individual subjectivity. Thirty Q-statements were selected from 34 Q-concourses formed based on the results of in-depth interviews and literature reviews. The P-samples were 30 primiparous mothers raising infants in the City of Seoul and Gangwon-do, Korea. They categorized the Q-statements using a 9-point scale. Using the PC-QUANL program, a factor analysis was performed with the P-samples along an axis. As a result of this study, they were classified into the types of “affectionate towards children,” “neglecting children,” and “focused on children,” who explained 49.3% of the total variance. Based on the study results above, it is necessary to develop and apply programs which can help the primiparous mothers appropriately maintain their psychological and physical health while raising their children and developing a desirable maternal identity, further to developing a program and evaluating effects to foster children as the types of “affectionate towards children” and “focused on children” for the infants, which are the most crucial factor in the maternal identity of the primiparous mothers.

Keywords: Subjective perception, maternal identity, primiparous mothers, raising infants, Q methodology

1. Introduction

Child delivery, for the primiparous mothers, is a very crucial, life changing experience since they have to learn about the maternal identity via the first child delivery, perform maternal roles, and adapt accordingly (Song, J. E. et al., 2010). For mothers, the periods of pregnancy, childbirth, postpartum, and child rearing are deemed to be very important developmental transition processes requiring physical, psychological, relational, and behavioral readjustment (Song, J. E. et al., 2015), as well as the most dynamic process in women's entire life cycle (Mercer, R. T. et al., 2006). While raising their first child, women experience positive experiences such as the sense of accomplishment and happiness along with various negative experiences including stress, anxiety, anger, and depression (Kim, H. K., 2008), and hence, it may be said that the process of establishing maternal identity and adjusting to child rearing is quite an important period (Song, J. E. et al., 2010).

Recently in Korea, a low fertility rate as a phenomenon and the influence of nuclear family have been influential, where the primiparous mothers experience pregnancy and childbirth for the first time in Korea lack the experience in performing the role of parents and cannot even find role models, whereby the stress and burden for performing the role of mother are further aggravated (Song, J. E. et al., 2013). This may lead to difficulties in establishing the maternal identity causing negative effects, further leading to difficulties in establishing the maternal identity for the primiparous mothers. Furthermore, the negative experiences of the primiparous mothers in the process of establishing their maternal identity may yield a negative perspective on the second childbirth and further accelerate the declining fertility rate (Kim, H. S. et al., 2005).

The establishment of maternal identity may be said to be a concept which encompasses various adaptations as a mother across the psychological, relational, behavioral, and the cognitive contexts in and for raising children (Brook, J. S. et al., 2003).

Empathy, self-esteem, health perception, depression and anxiety, role conflict and tension influence the formation of the maternal identity when mothers raise their children according to the establishment of maternal identity, and it is also evaluated as an important factor as it influences the physical, mental and social development and fetal attachment (The Korean standard dictionary, 2019)-(Moon, S. H. et al., 2019).

Infancy is a period in which rapid growth is achieved from 2 months to 12 months of birth and is also one of vigorous growth and development for the ingestion of breast milk or formula as a staple (Shin, H. S. et al., 2021). Furthermore, infancy is a period in which the respiratory, digestive, urinary, immune, and endocrine systems which depended on the mother inside of the womb adapt to exert their own functions in the external environment, and the organs adapted are independently active as living organisms and mature incrementally (Kil, H. et al., 2017). Physical stability as well

mental and emotional stabilities are crucial as the quantity and quality of the relationship with mother, the caregiver of infancy, lays the foundation for forming trust and distrust in object relation, interpersonal relationships, and social relationships. In this period, the most basic physiological habits for living as human is conceived, and the main developmental tasks include formation of affection, object permanence, and toilet training, which are the most important for the primiparous mothers in raising their children (Shin, H. S. et al., 2021).

There are insufficient studies conducted on how the mothers perceive and act on the maternal identity as primiparous mothers raising their infant children. As the primiparous mothers care for their infants, the perception of maternal identity is experienced on their own, which may be very personal and subjective, and hence, it is crucial to have them express the experience in their own language, and understanding the nature and interpreting the meaning of the statements are required, for which the Q methodology may be applied.

The Q methodology is one which is different from other general surveys or interviews in that it collects various statements by conducting individual interviews and can examine the in-depth understanding of individual honest experiences and subjective values, and categorizes the people's thoughts. This study is focused on the subjectivity expressed on the maternal identity of the primiparous mothers raising heir infancy children. Accordingly, this study has applied the Q methodology to categorize the maternal identity for the primiparous mothers raising their infancy children and explain the characteristics of the maternal identity by type to develop the basic strategies for devising the strategies for raising children for the primiparous mothers

2. Method of research

This study is to identify the types of subjectivity of the perception of maternal identity by using the Q-methodology to investigate the perception towards the maternal identity of primiparous mothers raising infants, and examine their characteristics.

2.1. Structure of the Q-concourse

The Q-sample concourse is the combination of the subjectively expressed and shareable knowledge (Kim, M. et al., 2016). In this study, the Q-sample on the perception towards maternal identity of primiparous mothers is a statement and questions on their maternal identity. Furthermore, the Q-concourse was extracted by integrating the data from the references and the previous studies on the maternal identity of primiparous mothers and the data from the individual in-depth interviews conducted with mothers of infancy.

2.1. Selection of Q-sampling

In order to select the Q sample, the first 50 Q-concourses collected were read repeatedly multiple times, and the categorization was performed by combining the statements which were considered to have common meanings or values for each topic. The classified categories were reviewed and revised by 2 professors of child nursing with experiences in the Q methodology research to determine whether the topic and the contents of the categorization were valid together with the collected data. Finally, 30 statements were selected from among the selected statements in Table 1.

Table 1: Statements adopted as Q samples.

No.	Statement
1	My highest priority is anything that has to do with my child.
2	I am careful when facing my child.
3	I show mature behaviors to my child.
4	I think my child is the prettiest regardless of the child's appearance.
5	My child is precious to me.
6	My child is lovely.
7	Seeing other children of my child's age reminds me of my child.
8	I am proud of my child.
9	I am happy when I am with my child.
10	I love hugging my child.
11	I want to spend special time with my child.
12	My child's smile makes me happy.
13	I think my child is beautiful even when whining or crying.
14	I treat my child kindly and gently even when I am not feeling well.
15	Even when I am tired and struggling, thinking of my child makes me energized and powerful.
16	I want to give my child everything I have.

17	Even if I lack sleep and tired, I get up for anything to help my child.
18	I feel upset and depressed when my child has no energy.
19	When I see my child in pain, I want to take that pain away from my child.
20	I feel like my life has been ruined by my child.
21	When I am away from my child, I worry about how well my child is doing.
22	When I am away from my child, I often think of my child.
23	When I am away from my child, I try to get home as early as possible thinking of my child.
24	I keep myself from a distance where my child can be seen, even when he is sleeping or playing alone.
25	I don't care about the child when I am focused on doing something
26	Even when I do house chores, I visually check how my child is doing.
27	I am most concerned about my child's nutrition and health.
28	I am more concerned about preparing my child's meal (milk, snacks) than my own.
29	I respond (reply) to my child's babbling and speech.
30	I feel like being one with my child.
31	I know that I am important to my child.
32	I can recognize my child (appearance or cry) immediately even from among many children.
33	I tend to be indifferent to my child.
34	When I'm tired and struggling, I honestly don't take care of my child.

2.2 Selection of the P-sampling method

Unlike the quantitative research, the Q-methodology deals with the intraindividual differences insignificance rather than the interindividual differences, and hence, the number and selection of the P-samples (people) is not limited. Based on the small sample theory, which provides that as the P-sample increases, many people are biased towards a single factor and the characteristics are not clearly revealed, and hence, it is most ideal when the sample is similar to the number of statements (Kim, M. et al.,

2016)e. Hence, in this study, 30 primiparous mothers who agreed to participate in the study from March 1, 2021 until May 1, 2021 were selected from among the primiparous mothers raising infant children and residing in Seoul and Gangwon-do for the P-sampling. Prior to this study, advance consent was secured from all volunteers, and they were informed that they can stop if they did not want to further proceed during the study, and were also informed on the maintenance of personal information's confidentiality and related matters.

2.4. Process and method of Q-sorting

According to the general classification principle of the Q-methodology, the Q-sorting process had 34 statements (Q samples) read and positive statements were classified on the right, while the negative statements were classified on the left, and the neutral statements on the center. The most positive ones were placed at +3, and the most negative ones were placed at -3, which were incrementally arranged at 3, 4, and 5 sheets to incrementally classify on the neutral side. Furthermore, as for the statement placed on both extremes (+3, -3), to verify the reason for choosing the statement, they were asked to write directly on the extra recording paper prepared or an additional interview was conducted to record the details. Most of the time it entailed for a single study subject to complete the Q-sorting was approximately 30-40 minutes, and the longest took 1 hour.

2.5. Method of data analysis

As for the data analysis, data were processed by using the PC QUANL program, and the Q-factor analysis was performed by using the principal component factor analysis method. As for the type, the type determined to be the best among the results obtained by inputting various factors based on the Eigen Value 1.0 or higher was selected. Z-score was used to determine the characteristics of the type and select the appropriate questions

3. Result

3.1. Formation of the Q type

As a result of performing the Q-factor analysis for the subjective perception of maternal identity by using the QUANL, 3 types were classified. The 3 types derived explained 49.3% of the total variance, and the explanatory power of each type was 16.4% for type 1, with 14.0% for type 2, and 18.9% for type 3 Table 1. Furthermore, the correlation between the types is identical to the results presented in Table 2.

3.2. Characteristics by type

The subjects of the study turned out to be 9 people of type 1, 10 of type 2, and 11 of type 3, respectively. The demographic characteristics and the factor weights within

each type are described in Table 2. For each type, the higher the weight, the more it means that the subject demonstrates the typical characteristics of the type in question.

For the analysis by the type of subjective perception of maternal identity, based on 34 statements, characteristics for each type were described with a focus on the items which turned out to have each subject giving consent positively (Z score +2.0 or more) or negatively (Z score -2.0 or more). Furthermore, when describing the characteristics of each type, a particular emphasis was placed on the items with a large difference between the standard score of one type and the average and standard score of another type. The Q-questions and Z-scores (± 1.0) for each type are presented in Table 3.

Table 2: Types, Eigen values, variance, cumulative, factor weight, and demographic characteristics for P-sample (N=30)

Type	Eigen values, variance (%), cumulative	P No	Factor weight	Age (year)	Relationship	Child's age (month)	Health Condition
Type 1 (N=9)	Eigen values 6.61 Variance 0.22 Cumulative 0.22	14	0.77	31	Mother	12	Very healthy
		15	1.62	31	Mother	12	Very healthy
		16	1.56	30	Mother	7	Healthy
		19	1.65	35	Mother	3	Very healthy
		20	1.51	30	Mother	4	Very healthy
		21	1.10	26	Mother	2	Very healthy
		23	1.68	35	Mother	4	Healthy
		24	0.63	27	Mother	8	Healthy
Type 2 (N=10)	Eigen values 3.56 Variance 0.11 Cumulative 0.33	1	0.64	34	Mother	18	Healthy
		8	0.70	35	Mother	3	Average
		17	1.32	36	Mother	6	Very healthy
		18	1.20	29	Mother	11	Very healthy
		22	1.51	41	Mother	8	Very healthy
		25	0.60	44	Mother	7	Very healthy
		4	0.84	27	Mother	9	Healthy
		6	1.05	30	Mother	9	Very healthy
		7	1.90	32	Mother	8	Average
		13	1.30	29	Mother	6	Healthy
Type 3 (N=11)	Eigen values 2.98 Variance 0.09 Cumulative	2	1.64	31	Mother	5	Average
		12	0.46	26	Mother	2	Average
		30	1.22	33	Mother	1	Very healthy
		3	1.11	34	Mother	8	Very healthy

0.43	5	0.89	37	Mother	9	Average
	11	1.89	29	Mother	5	Healthy
	9	0.39	28	Mother	2	Healthy
	10	0.88	34	Mother	4	Average
	27	0.15	36	Mother	4	Healthy
	28	0.30	31	Mother	13	Healthy
	29	0.54	34	Mother	11	Very healthy

Table 3: Correlation matrix between types (N=30)

Variables	Type I	Type II	Type III
Type I	1		
Type II	0.62	1	
Type III	-.284	.027	1

1) Type 1: Affectionate towards children

The subjects associated with type 1 were 9 out of a total of 30 subjects, whose average age was 30.7 years, and the average age of their children was 6.4 months. All 30 subjects were mothers, and the health condition of the children was such that, 6 of them were very healthy and 3 of them were healthy, they said.

The items with the strongest agreement for type 1 were “Seeing other children of my child's age reminds me of my child ($Z=1.7$)” and “I am happy when I am with my child ($Z=1.5$).” Whereas, the items for which type 1 demonstrated a most negative agreement were “I think my life has been ruined because of my child ($Z=-2.2$)” and “I treat my child kindly and gently even when I am not feeling well ($Z=-1.9$).”

2) Type 2 : Indifferent towards children

The subjects associated with type 2 were 10 out of a total of 30 subjects, whose average age was 33.7 years, the oldest among the types. Their child's age turned out to be 8.5 months. All 30 subjects were mothers, and the health condition of their children was very healthy for 5 people, 3 for good health, and 2 for average, respectively.

The items with the strongest agreement for type 2 were “I tend to be indifferent to my child ($Z=2.1$)” and “I think my life has been ruined because of my child ($Z=2.1$).” Whereas, the items which showed a most negative agreement for type 2 were “I honestly do not take care of my children well enough when I am tired and troubled ($Z=-2.2$)” and “I do not care much about my child when I am focused on something ($Z=-2.0$).”

3) Type 3 : Focused on children

The subjects associated with type 3 were 6 out of a total of 30 subjects with an average age of 32.1 years, and the average age of their children was 5.8 months. All

30 subjects were mothers, and the health condition of their children was very healthy for 3 of them, healthy for 4, and average for 4, respectively.

The items which showed the strongest agreement for type 3 were “I feel like being one with my child ($Z=1.9$)” and “When I see my child in pain, I want to take that pain away from my child ($Z=1.9$).” Whereas, the items which showed a most negative agreement for type 3 were “Seeing other children of my child's age reminds me of my child ($Z=-2.2$)” and “The highest priority for me is anything that has to do with my child ($Z=-1.5$).”

Table 4. The Q-statements and Z-scores (± 1.0) by the Parenting Types. (N=30)

Type	Q-statement	Z-score
Type 1	Q7. Seeing other children of my child's age reminds me of my child.	1.73
	Q9. I am happy when I am with my child	1.48
	Q4. I think my child is the prettiest regardless of the child's appearance.	1.44
	Q5. My child is precious to me.	1.39
	Q12. My child's smile makes me happy.	1.39
	Q6. I am proud of my child.	0.91
	Q20. I feel like my life has been ruined by my child.	-1.26
	Q33. I tend to be indifferent to my child.	-1.28
	Q13. I think my child is beautiful even when whining or crying.	-1.68
	Q14. I treat my child kindly and gently even when I am not feeling well.	-1.92
Type 2	Q30. I feel like being one with my child.	-2.21
	Q33. I tend to be indifferent to my child.	2.14
	Q20. I feel like my life has been ruined by my child.	2.07
	Q22. When I am away from my child, I often think of my child.	2.03
	Q19. When I see my child in pain, I want to take that pain away from my child.	2.01
	Q29. I respond (reply) to my child's babbling and speech.	1.41
	Q20. I feel like my life has been ruined by my child.	1.22
	Q32. I can recognize my child (appearance or cry) immediately even from among many children.	-1.68
	Q6. I am proud of my child.	-1.91
	Q5. My child is precious to me.	-1.94
Type 3	Q10. I love hugging my child.	-1.66
	Q25. I don't care about the child when I am focused on doing something	-2.00
	Q34. When I'm tired and struggling, I honestly don't take care of my child.	-2.21
	Q30. I feel like being one with my child.	1.90
	Q19. When I see my child in pain, I want to take that pain away from my child.	1.88
	Q33. I tend to be indifferent to my child.	1.83
	Q6. I know that I am important to my child.	1.79

	Q18. I feel upset and depressed when my child has no energy.	1.73
	Q24. I keep myself from a distance where my child can be seen, even when he is sleeping or playing alone.	-0.99
	Q4 I think my child is the prettiest regardless of the child's appearance.	-1.83
	Q6. I am proud of my child.	-1.85
	Q1 My highest priority is anything that has to do with my child.	-1.45
	Q7. Seeing other children of my child's age reminds me of my child.	-2.16

3. Items matches between types

Examining the results above, the subjective perception of maternal identity is classified into 3 types, demonstrating distinct characteristics corresponding to each type. However, the mothers corresponding to the 3 types had statements in common agreeing with or opposing the subjective perception of maternal identity, which are presented in Table 5. The item for which the mothers showed a strong agreement was "I am happy when I am with my child." That is, when a mother is with the child she raises, she is happy, they said.

Table 5: Consensus items and average Z-scores ($N=30$)

Q-statement		Z-scores
Q9	I am happy when I am with my child	1.0

4. Discussion

Maternal identity may be said to be a concept which encompasses various adaptations as a mother across the psychological, relational, behavioral, and the cognitive contexts (Brook, J. S. et al., 2003).

Accordingly, this study sought to categorize the maternal identity by identifying the subjective perception types of maternal identity of the primiparous mothers raising infants, with a focus on the characteristics of perception types of the maternal identity of the primiparous mothers raising infants, and by explaining which, attempts have been made to prepare the basic data for developing the basic strategies for devising strategies for raising the children of the primiparous mothers.

Type 1 (type of "affectionate towards children") which showed the highest explanatory power, means a heart of loving people and feeling the affections of parents for their children (Jo, M. K. et al., 2008)(Korean Language Dictionary). The subjects associated with this type of statement most agree with "Seeing other children of my child's age reminds me of my child," while the most negative statement was "I feel like being one with my child." Accordingly, the first type was named the type of "affectionate towards children." In the study of Moon, Kim, Na (Kim, H. G. et al., 2008), the type of "affection accepting" (Group I) was presented, and the score of the affection factor among the sub-domains during child rearing was relatively higher than the group average, which is similar to the results of this study. In the study of

Shin et al (Seo, Y. M. et al., 2011) on the maternal identity perceived by the mothers of infancy, the research results of unconditional love were confirmed for the perception of the meaning of maternal identity, which may be seen to be similar to the results of this study (Seo, H. S. et al., 2002). In the research results such that the child rearing which unconditionally accepts the children's behavior or demands can have a negative effect on the growth and development of children, and hence, it is necessary to guide them to indicate the type of "affectionate towards children" towards the formation of a positive parent-child relationship. As such types may lack the understanding of the characteristics of the developmental stage of infancy and the personality which ought to be established in their children of infancy by using only affectionate acts, education on the child rearing methods which the primiparous mothers should include when raising their children will have to be included.

Type 2 (type of "neglecting children") showed a high explanatory power, and "neglecting" means that a person neglects the other without providing basic accommodation, food, medical care, and education (Jo, M. K. et al., 2008). According to the results of this study, the most agreed statement was "I tend to be indifferent to my children" and the most negative statement was "I honestly do not take care of my children well enough when I am tired and troubled." Accordingly, the second type was named the child neglect type. Such results were confirmed in the study of Moon, Kim and Na (Kim, H. G. et al., 2008) where the passive neglecting type (Group III) was a high type when raising children, and even in the study of Kim, Kim (Kim, M. H. et al., 2000) a high score was high for the type of "neglecting children," which is similar to the results of this study. If the child's behavior or needs are not accommodated and neglected, so doing can negatively affect the behavior and growth and development of the child, and hence, mothers need to make efforts to confirm the children's needs [18]. In the case of the primiparous mothers, it is important to prepare a strategy to activate the child-rearing support of the spouse as an important support system to help establish the maternal identity for the primiparous mothers, since child rearing for the first time can be difficult, and it is necessary to develop and apply a program for raising children of infancy including spouses in the future.

Lastly, it is type 3 (type of "focused on children") with a high explanatory power, which means that it is so large and important that it cannot be taken lightly (Korean Language Dictionary). In this study, a most agreed statement was "I feel like being one with my child," and the most negative statement was "I keep a distance from where I can see my child even when my child is sleeping or playing alone," and hence, this type was named "focused on children." The studies of Shin et al (Seo, Y. M. et al., 2011) confirmed "share pain" and "committed to child" about the experience of maternal identity, which is consistent with the results of this study. It was also confirmed that the mother's sense of maternal identity was being established through the mother's sense of responsibility for her child and given the fact that she looked at her child (Seo, Y. M. et al., 2011). In the studies of (Moon, S. H. et al., 2019),

consistent responses towards children were confirmed, which suggested that they are similar to the results of this study. To promote the maternal identity, emotional interventions to help reduce postpartum depression by checking on the physical and mental health conditions of the primiparous mothers are also crucial, and it is believed that special attention and intervention need to be paid to help smooth out the transition of child rearing for the primiparous mothers of infancy who are in the sensitive stage of their postpartum depression.

This study has limitations in generalizing the results of this study since the mothers raising infants among the primiparous mothers in 2 regions of Seoul and Gangwon-do were targeted. However, it is believed to be very meaningful in that it confirmed the maternal identity since there is a lack of research on the subjectivity type of the perception towards the maternal identity of the primiparous mothers raising children during their infancy. Based on the evidence that this study could contribute to the high quality growth and development of children by establishing the maternal identity of the primiparous mothers raising infants, developing and applying the material identify programs for the primiparous mothers are proposed for and in the future studies.

5. Conclusion

This study attempted to identify the types of subjectivity of the primiparous mothers' perception towards maternal identity by using the Q-methodology to investigate the perception of the maternal identity of the primiparous mothers raising infants, and examine their characteristics. As a result of conducting this study, they were classified into the type of "affectionate towards children," "neglecting children," and "focused on children," and they explained 49.3% of the total variance. Based on the above research results, recommendations are made for developing a child rearing program which can help nurture children of infancy, which is the most important factor in the maternal identity of the primiparous mothers, as the type of "affectionate for children" and "focused on children." Furthermore, it is necessary for the primiparous mothers to avoid neglecting children when raising them, and while maintaining their psychological and physical health, they need to develop and apply the programs for establishing and building on the appropriate material identity to enable them to nurture their children.

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