Research article

A study on meta-parenting: Yemeni parental cognition

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ARTICLE INFO
Keywords:
Meta-parenting
Parents
Child
Parental cognition
Ruminating
Yemen

ABSTRACT
Over the past decade, a plethora of research stressed the importance of understanding parental cognition, including meta-parenting. The existing literature echoed a wide range of parental variations accredited more to a child's psychological attainment and parental social cognition of implicit elements, such as beliefs, emotions, values, and culture. However, increasing contemporary research is warranted to diagnose deliberate and mindful parenting constructs. This topic has not been widely examined in Yemen and Arab countries. Given this gap, the main aim of this study was to assess the relationship between meta-parenting and non-meta-parenting and an inter-correlation among all dimensions. The comparison between mothers' and fathers' parental awareness concerning (1) age, (2) marital status, and (3) education using the version of the new relatively social cognition construct, meta-parenting (anticipating, assessing, reflecting, problem-solving) and non-meta-parenting (ruminating) scale of Hawk and Holden (2006). For data collection, cross-sectional survey research composed of 21-item was administered to a sample of 317 (mothers and fathers) aged 27 to 55. Unexpectedly, results denote a high level of parental cognition among Yemenis parents; it indicated positive correlations between the overall meta-parenting and non-parenting among Yemenis parents. Findings also revealed significant differences in problem-solving dimension and ruminating favoured fathers. Results indicated significant differences in all dimensions except anticipating, problem-solving, and ruminating, which favoured parents 31 years old and above. In addition, a significant correlation was found in overall meta-parenting except problem-solving and ruminating, which favoured the married group of parents and those with a university level.

1. Introduction
Meta-parenting is a term coined to describe the conscious consideration before or after ongoing communication and contact with a child (Holden et al., 2017). Meta-parenting assists children in remaining on favourable developmental tracks by intervening when they begin to stray. Then, to better the child back on track, metacognitive thinking and problem-solving skills are emphasized (Marulis & Nelson, 2021). The way a parent interacts with their child during those tense situations is widely accepted as a key predictor of both positive and negative outcomes for the child (Grusec &Danyliuk, 2014). The majority of parenting research conducted in the last century assumed that parenting is characterized by consistency (Greenberg &Lippold, 2015; Halgunseth et al., 2013; Marceau et al., 2014; Lippold et al., 2015, 2016) and that parents are presumed to think and interact with their children in the same way regardless of time, circumstance, or child. This bias can be attributed to several reasons, such as the precedent set by earlier researchers and the ease with which untested assumptions can be accepted. Conservative theoretical views are preferred by parents (Dennis et al., 2015). Studying parental cognitions has been a long prime target for interventions. Understanding what goes in parents’ minds while interacting with their children may leave a mark on the child and may also affect parents’ behaviour, affecting the child’s development and driving their behaviours. Respectively, parental cognition is categorized into two forms “automatic” and “deliberate.” Automatic parental cognition is a scripted schema that operates with little awareness. In contrast, deliberate parental cognition is event-dependent and compels more effortful thoughts. For example, parents think more deliberately about how to solve the problem with their children (Wong &Kam, 2019). Parents’ deliberate and critical reflections on their parenting with the child are referred to as

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https://doi.org/10.1016/j.heliyon.2022.e11603
Received 14 July 2022; Received in revised form 12 October 2022; Accepted 9 November 2022
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meta-parenting (Tamm et al., 2012). These effortful thoughts usually occur before or after parent-child interactions and indicate a higher level of understanding when raising children.

In a nutshell, meta-parenting, clusters of parents’ evaluative thoughts of child-rearing, is an important research topic and a prerequisite to parents’ efficacy. However, there appears to be a lack of clarity surrounding this issue in Yemen. Accordingly, and in the hope of understanding parental deliberate thoughts and child-rearing practices in Yemen, this study set out to extract rigorous information and insightful evidence of how the Yemeni parents recognize meta-parenting and non-meta-parenting (ruminating) using the new dimensional measure of Hawk and Holden (2006), and to gauge how these might differ across demographic, marital status and educational level variables. Throughout this work, the researchers aim to expose the cognitive features of parental practices of Yemeni parents and reflect on how parental cognition is linked to marital status and educational level among Yemeni parents. This endeavour may offer an approach to ongoing debates by examining this concept in ample cultural contexts in other countries. In order to achieve these aims, the current study addresses the following research hypotheses:

1. There is a significant correlation between all meta-parenting dimensions (assessing, reflecting, anticipating, problem-solving) and non-meta-parenting (ruminating).
2. There is a significant correlation between fathers and mothers in meta-parenting and non-meta-parenting.
3. There are statistically significant differences between meta-parenting dimensions and non-meta parenting (ruminating) according to age, marital status, and educational level.
4. The comparison between marital status and education level in meta-parenting and non-parenting correlate significantly.

### 1.1. Literature review

A new parenting concept has recently been introduced, “Meta-parenting.” As the term suggests, it refers to parents’ deliberate thoughts or effortful cognitions about parenting (Holden et al., 2017). Provided that much of the research on parental social cognition has focused on implicit processes (i.e., those that occur without parental awareness) or attributions and attitudes, this new construct focuses on deliberate thoughts about parenting (Hawk & Holden, 2006). Holden and Hawk (2003) suggested that meta-parenting may help increase parents’ effectiveness, reduce child-rearing stress by seeking social support and knowledge about parenting, and motivate parental change (Holden and Hawk, 2003). Even so, it is a complex construct influenced by various factors, including the parent’s demographics (education, age, gender).

Furthermore, meta-parenting can motivate and reveal issues in the parent-child relationship. By way of example, parents who devote time to researching and testing solutions to common issues may spend a similar amount of time thinking about the problem without coming up with a viable solution. As a result, time spent on meta-parenting can reflect a parent, child, or relationship effect (Tamm et al., 2012).

This study aimed to extend Hawk and Holden’s (2006) and Wong and Kam’s (2019) findings regarding mothers’ meta-parenting cognitions by including fathers’ cognitions and non-meta parenting (ruminating) as well. Undoubtedly, the studies, as mentioned earlier, incorporated an excellent review of meta-parenting outlining potential predictors and outcomes; however, Hawk and Holden’s (2006) and Wong & Kam’s (2019) work did not posit their concepts from a larger social-cognitive theory perspective. The researchers, thus, selected the Social Cognitive Theory (SCT) (Bandura, 1999) in the view that it addresses multiple sources of influence on individuals and could be the potential predictors of meta-parenting. Following is a brief description of how SCT is included in meta-parenting. In effect, SCT entails the triadic reciprocal causation of behaviours that occur within a context of interaction. Involved in this complex set are three entities: (1) the individual (cognitions, emotions, and biological events), (2) his/her behaviour, and (3) the external environment (Merrifield et al., 2015). The present study examines the interactions between two of the three entities proposed by SCT, the individual, and the external environment. Meta-parenting occurs within the individual and thus, according to SCT, may influence and be influenced by environmental factors, such as marital status, parental education, or child qualities. Social Cognitive Theory does not provide insight into how different cognitions within the individual influence one another; however, given the proposed associations addressed in this study, using this theory is reasonable to expect that different categories of cognitions will be mutually influential.

To examine the deliberate forms of parents’ thoughts, the co-authors Hawk and Holden (2006) introduced the meta-parenting construct, composed of four component thought processes. The first component, anticipating, refers to parents’ deliberate contemplation of a future event in the child-rearing realm, such as childproofing a home before a child can crawl (Morrongiello & Kirjakou, 2004). Anticipating entails formulating parenting goals or foreseeing potential problems that may occur in the future with the child. A parent, for instance, may consider her child’s emotional development or control peer relationships and impacts (Patterson &Stouthamer-Loeb, 1984). The second component, assessing, involves thinking about parenting in the lifetime of child-rearing, like assessing why a child committed a certain behaviour or how parents are parenting and monitoring their behaviours with their child. The third component, reflecting, pertains to the parents’ re-evaluation of their interactions and things that happened with the child; it is a re-assessment of a past event, such as a decision or a problem they solved before with the child. The fourth component, problem-solving, presents the cognitive processes involved in solving problems, finding alternative solutions, and testing solutions in child-rearing.

Later, when recognised that parents may think negatively about their parenting practices, Hawk and Holden (2006) added a fifth component, ruminating. This latter is a mental negative thinking style and one major risk of depression in youth characterized by repetitive, sustained negative emotions. When parents ruminate for long episodes, they are in danger of developing depressive episodes in the future (Kamanda et al., 2016; Donato &Bertoni, 2017). For example, high amounts of criticism, rejection, and control, as well as low levels of warmth and acceptance, are connected to poor cognitive schema in children and adolescents (Beck, 1967). Children who grow up in a highly critical environment have poor self-esteem and a heightened sense of powerlessness, which encourages the formation of a negative self-schema (Nolen-Hoeksema, 1991; Smets et al., 2012; Tamm et al., 2012). Meta-parenting filled with ruminating can be a dysfunctional form of parental awareness (Wong &Kam, 2019).

Given the eminence of meta-parenting and its influence on child-rearing and development, it has become a popular research endeavour. Thus, it is valuable to examine how Yemeni parents evaluate, adjust, and monitor their parenting by bringing these processes together. Nonetheless, meta-parenting and ruminating have not been sufficiently investigated in the Yemeni context. The study, hence, aims to offer exploration-fed accounts with new considerations by exploring the meta-parenting and ruminating and exposing the reality and features of Yemeni parents’ behaviour from a deliberate cognitive perspective. The current study focused on the differences between four meta-parenting components (anticipating, assessing, problem-solving, and reflecting) and one non-meta-parenting factor (ruminating) identified in the C-MPPQ. An effect of the Yemeni mothers and fathers related to meta-parenting and non-meta parenting, the differences of meta-parenting factors regarding education, marital status, and age variables, and the differences of a non-meta-parenting ruminating component according to education, marital status, and age variables.
2. Methodology

2.1. Research design

A cross-sectional survey study was adopted to know the descriptive statistics, and a correlation design was used between meta-parenting and non-meta-parenting (ruminating) to find out the differences between students’ fathers and mothers with other demographic variables related to age, marital status, and education by developed scale within the Yemeni context. Gall and Borg, in 1996, stated that correlational research designs are highly useful for studying problems in education. The purpose of correlation research is to discover relationships between/among variables through the use of correlational statistics (Castellan, 2010).

2.2. Data collection

The students met at their schools from November 2021 to February 2022. Before the meeting, preparations were made, and requests were sent to ten school councils in Sana’a capital city of Yemen. As a result, ten school boards granted their consent letters. Efforts continued by coordinating with some parents over the phone to facilitate the pilot test. However, some steps were taken in advance to avoid sampling errors. The random sample was of an adequate size because the main concern was not the percentage of the sampled research population. It was rather the total size of the sample selected relative to population complexity. Whereas the suitable sample, the less likely the results will be biased, diminishing returns can rapidly be identified when samples exceed a certain size that must be balanced with the researcher’s resources (Taherdoost, 2016). Consequently, sampling error was decreased by the current sample size, and statistical formulas were available for defining sample size.

2.3. Participants

The research method revealed the necessary parameters for estimating the sample size and the specified sample as a finite component or subset of participants from the target population. This study took place in ten public primary schools that were chosen at random. According to the most recent Yemeni statistics, the total number of primary school students in these districts was 291,015 (Statistical Yearbook, 2016), recruited through contacts with only Yemeni primary grades (1–3) and school students’ parents. The following equation was used to specify the participants’ number and for generalization S = N (X2 P (1 – P) S = X2 P (1 – P) S = X2 P (Ali &Zalkipil, 2018). All parents were Yemeni living in Sana’a city, permanently at the time of data collection. Therefore, the target population refers to the whole set of subjects whose features interest the researchers. The participants included 317 parents (155) fathers (M = 69.284, SD = 10.149) and (162) mothers (M = 67.968, SD = 12.848), aged (27–55) years (30 years and less) (M = 65.437, SD = 11.066), and (31 years and above) (M = 69.622, SD = 11.635). More details on the demographic information of the sample can be found in table (1). Also, all participants had at least one child under 12. Researchers controlled the place of recruitment to make sure that younger or older children were not overrepresented in the sample.

Table 1.

2.4. Research Tool

Parents completed a form to provide basic relative and demographic details, such as age, educational qualification, and marital status (married or in an informal relationship). Psychometric properties of the Chinese Meta-parenting Profile Questionnaire Short-form (MPPQ-S) (Wong & Kam, 2019) were used and were categorized into Never/Rarely (1); Sometimes (2); Usually (3); Often (4); Constantly (5) based on Hawk and Holden (2006) when the version by Wong and Kam (2019) is used. The present study reproduced this tool creation process with the authors’ consent. The initial version of 21 items was used as the basis for further translation and adaptation procedures by reproducing this original process while adapting the tool according to the Yemeni context.

The 21-item included five subscales. Assessing included five items (e.g., "Think about how your child is developing, compared with his/her peers?"). Anticipating contained three items (e.g., "Think about something that could become a problem for your child?"). Reflecting consisted of 4 items (e.g., "Have concerns about your parenting behaviours?"). Problem-solving contained five items (e.g., "Talk with your partner or a friend about what is happening with your child?"). Ruminating contained four items (e.g., "Get stuck in thinking or worrying when you consider or think about what is occurring with you and your child?"). Researchers investigated the contract validity by EFA statistical methods and found the same factors and items. All items loaded higher than 0.40 and were acceptable (AL-Qadri et al., 2021). Also, all factors were confirmed through CFA and figure out all items’ loaded values were higher than 0.50 with good fit indices as follows; X2 = 481.876; df = 121; p < .001; CFI = 0.912; GFI = 0.904; NFI = 0.910; TLI = 0.903; RMSEA = 0.071. These results demonstrated that the Yemeni Meta-parenting profile questionnaire models were appropriate (Hair et al., 2014; AL-Qadri et al., 2021).

The reliability of the research tool in the whole sample was 0. 856, 0. 855, 0. 801, and 0.641. Also, sub-scale values; in Assessing factor was 0.819, 0. 820, 0.776, and 0.603; Anticipating was 0.744, 0.747, 0.709, and 0.504; Reflecting was 0.763, 0.764, 0.717, and 0.515; Problem-solving was 0.725, 0.731, 0.728, and 0.530; Ruminating was 0.701, 0.706, 0.707, and 0.500 for Cronbach’s Alpha, McDonald’s Omega, Composite Reliability (CR) and Average Variance Extracted (AVE) respectively. All values of the reliability for each factor and overall were
higher than 0.70. Hence, there was appropriate reliability of the Yemeni Meta-parenting profile questionnaire (Heale & Twycross, 2015). So, all values of AVE for each factor and overall were higher than 0.50 and indicated that to be acceptable according to theoretical criteria (Deng and Chan, 2017; Watkins, 2017).

2.5. Procedure

Ethics approval had been obtained from an official institutional review board before data collection. Consent was also obtained from the ten local primary schools in Sana’a city (Al-Esra School, Socotra School, Om Habiba School, Al-Khair School, Abdulrahman Bin Auf School, 7 July School, Salem Quten School, Mouta School, Aisha School, and Khalid Bin Al-Waleed School), the researchers invited the students’ parents by schools’ principles and explained to them the nature of study for consenting. The procedure involved having the parents come to the schools’ management offices. After signing the informed consent, parents completed the paper and pencil surveys. On average, this took about 45 min. The research data were analyzed using several statistical methods to determine the research outcomes and investigate the instrument’s validation using SPSS 24 and JASP.

3. Results

Table 2 illustrates the main variables’ mean, standard deviation, and variance, including this study’s meta-parenting (assessing, anticipating, reflecting, problem-solving) and ruminating as follows: (16.814 ± 4.008) for assessing, (9.568 ± 2.504) for anticipating, (12.912 ± 2.667) for reflecting, (16.606 ± 3.445) for problem-solving, and (12.574 ± 2.891) for ruminating. The highest value mean of meta-parenting of students’ parents was assessing, followed by problem-solving, reflecting, anticipating, and non-meta-parenting (ruminating) was close to the mean of assessing.

Moreover, Table 2 illustrates the correlation between meta-parenting and non-meta-parenting (ruminating). In order to examine the correlation between each factor of meta-parenting and ruminating and values were as follows: Assessing with ruminating was (0.347), anticipating with ruminating was (0.247), reflecting with ruminating was (0.402), problem-solving with ruminating was (0.606), and meta-parenting with non-meta-parenting (ruminating) was (0.694). All values indicate a high correlation between meta-parenting variables and non-meta-parenting.

According to Table 3, the difference between fathers and mothers of Yemenis parenting thoughts and behaviours. This study reviewed the importance of parents’ abilities to understand and interpret their children’s needs to ensure positive outcomes for their children. Moreover, parents’ roles are crucial in shaping their children’s future. Parents who engage in positive parenting due to contextual factors such as stressful circumstances, child’s and family characteristics, vulnerabilities of parents, and context of living (Donato & Bertoni, 2017).

Table 5 shows the difference between married and informal relationships of students’ parents regarding meta-parenting domains. There is a statistically significant difference in problem-solving, meta-parenting (Overall), and non-meta parenting (ruminating) favouring the married group and a non-statistically significant difference in anticipating, problem-solving, and ruminating (non-meta parenting) through T-test values.

The difference among educational level groups of students’ parents (university, vocational, and high school) is presented in Table 6. There were statistically significant differences in favour of the university, high school, and vocational groups. In the same vein, there were statistically significant differences in meta-parenting (Overall) and non-meta parenting (ruminating), favour university followed by the vocational followed by the high school group, and non-statistically significantly different differences in anticipating, problem-solving, and ruminating (non-meta parenting) through F-value and using one-way ANOVA as a suitable statistical method.

On the other hand, ANOVA was used to compare parents’ gender and their educational level in meta-parenting and non-meta-parenting domains. There were significant group effects: Gender (Male-Female) Educational Level (University-Vocational-High School) on the assessing domain favours university level with mothers, vocational level with mothers, and high school level with fathers, F (5, 311) = 4.619, p < .001. Problem-solving F (5, 311) = 4.583, p < .001, favour university level with fathers, vocational with fathers, and high school with fathers. Meta parenting, F (5, 311) = 6.610, p < .001, favours university level with fathers, vocational with mothers, and high school with fathers. And non-meta parenting (Ruminating), F (5, 311) = 3.683, p < .01, university level with fathers, vocational with mothers, and high school with fathers.

Table 2. Descriptive statistics and intercorrelation of meta-parenting domains and non-meta parenting (Ruminating).

| Variable                  | Mean (SD) | 1  | 2  | 3  | 4  | 5  | Meta-parenting (Overall) |
|---------------------------|-----------|----|----|----|----|----|--------------------------|
| Assessing                 | 16.814 (4.008) |    |    |    |    |    |                          |
| Anticipiting              | 9.568 (2.504) | 0.406*** |    |    |    |    |                          |
| Reflecting                | 12.912 (2.667) | 0.549*** | 0.512*** |    |    |    |                          |
| Problem-solving           | 16.606 (3.445) | 0.428*** | 0.338*** | 0.596*** |    |    |                          |
| Non-meta-parenting (Ruminating) | 12.574 (2.891) | 0.347*** | 0.247*** | 0.402*** | 0.606*** |    |                          |
| Meta-parenting (Overall) | 68.473 (11.616) | 0.772*** | 0.636*** | 0.806*** | 0.805*** | 0.694*** |                          |

p < .05, **p < .01, ***p < .001.
regulate their emotions in parental behaviours (Vasta, 1982; Masters and Carlson, 1984; Holden and Hawk, 2003), and if parents too much meta-parent or overly ruminate can alternatively become unproductive and over-focused of their needs as opposed to the needs of their child (Tamm et al., 2012). Furthermore, several longitudinal studies suggested that rumination predicted the development of depressive symptoms among individuals (Nolen-Hoeksema, 1991) and led to intrusive memories (Smets et al., 2012).

Following the findings, it could be theorized that environmental and societal changes, particularly in politics or economy, may impact the parenting styles of parents; accordingly, future investigations need to examine in greater depth the effect of politics and economy on parenting and more update studies need to explore the consequences of rumination on children’s outcomes. Further, future studies on immigrant Yemenis’ parenting practices are recommended too.

Another optimal result worth noting is that the Yemenis parents meta-parenting total subscale scores M = 68.47, SD = 11.61 are notably less as compared to previous research studies subscales such as Holden et al. (2017) study on racial and ethnic groups of mothers which displayed total mean scores of M = 135.86, SD = 19.07, as well as the study of Sood

| Table 3. Group descriptive- Parent gender through independent samples T-Test. |
|---------------------------------|-------|-----|------|-----|-----------|-----|-------|
|                                  | N     | M   | SD   | SE  | T-Test   | df  | p    |
| Assessing                       |       |     |      |     |          |     |      |
| Fathers                         | 155   | 16.677 | 3.710 | 0.298 | 0.592    | 315 | 0.554 |
| Mothers                         | 162   | 16.944 | 4.281 | 0.336 |          |     |      |
| Anticipating                    |       |     |      |     |          |     |      |
| Fathers                         | 155   | 9.574  | 2.579 | 0.207 | 0.044    | 315 | 0.965 |
| Mothers                         | 162   | 9.562  | 2.439 | 0.192 |          |     |      |
| Reflecting                      |       |     |      |     |          |     |      |
| Fathers                         | 155   | 12.961 | 2.606 | 0.209 | 0.324    | 315 | 0.746 |
| Mothers                         | 162   | 12.864 | 2.731 | 0.215 |          |     |      |
| Problem-solving                 |       |     |      |     |          |     |      |
| Fathers                         | 155   | 17.065 | 3.180 | 0.255 | 2.336*   | 315 | 0.020 |
| Mothers                         | 162   | 16.167 | 3.636 | 0.286 |          |     |      |
| Meta-parenting (Overall)        |       |     |      |     |          |     |      |
| Fathers                         | 155   | 69.284 | 10.149 | 0.815 | 1.216    | 315 | 0.225 |
| Mothers                         | 162   | 67.698 | 12.848 | 1.009 |          |     |      |
| Non-meta-parenting (Ruminating)|       |     |      |     |          |     |      |
| Fathers                         | 155   | 13.006 | 2.508 | 0.201 | 2.628**  | 315 | 0.009 |
| Mothers                         | 162   | 12.160 | 3.168 | 0.249 |          |     |      |

| Table 4. Group descriptive- Parent’ age through independent samples T-Test. |
|---------------------------------|-------|-----|------|-----|-----------|-----|-------|
|                                  | Parent’ Age | N | M   | SD | SE | T-Test | df | p       |
| Assessing                       | 30 years and less | 87 | 15.253 | 4.676 | 0.501 | 4.386*** | 315 | <.001   |
|                                | 31 and above     | 230| 17.404 | 3.561 | 0.235 |          |     |         |
| Anticipating                    | 30 years and less | 87 | 9.138  | 2.729 | 0.293 | 1.887    | 315 | 0.060   |
|                                | 31 and above     | 230| 9.730  | 2.400 | 0.158 |          |     |         |
| Reflecting                      | 30 years and less | 87 | 12.368 | 2.426 | 0.260 | 2.247*   | 315 | 0.025   |
|                                | 31 and above     | 230| 13.117 | 2.729 | 0.180 |          |     |         |
| Problem-solving                 | 30 years and less | 87 | 16.333 | 3.150 | 0.338 | 0.865    | 315 | 0.387   |
|                                | 31 and above     | 230| 16.709 | 3.551 | 0.234 |          |     |         |
| Meta-parenting (Overall)        | 30 years and less | 87 | 65.437 | 11.066 | 1.186 | 2.896**  | 315 | 0.004   |
|                                | 31 and above     | 230| 69.622 | 11.635 | 0.767 |          |     |         |
| Non-meta-parenting (Ruminating)| 30 years and less | 87 | 12.345 | 2.782 | 0.298 | 0.868    | 315 | 0.386   |
|                                | 31 and above     | 230| 12.661 | 2.933 | 0.193 |          |     |         |

| Table 5. Group descriptive- marital status through independent samples T-Test. |
|---------------------------------|-------|-----|------|-----|-----------|-----|-------|
|                                  | Marital status | N | M   | SD | SE | T-Test | df | p     |
| Assessing                       | Married    | 258| 17.019 | 3.852 | 0.240 | 1.917   | 315 | 0.056 |
|                                | Informal relationship | 59 | 15.915 | 4.557 | 0.593 |          |     |       |
| Anticipating                    | Married    | 258| 9.581  | 2.477 | 0.154 | 0.201   | 315 | 0.840 |
|                                | Informal relationship | 59 | 9.508  | 2.642 | 0.344 |          |     |       |
| Reflecting                      | Married    | 258| 13.031 | 2.550 | 0.159 | 1.671   | 315 | 0.096 |
|                                | Informal relationship | 59 | 12.390 | 3.096 | 0.403 |          |     |       |
| Problem-solving                 | Married    | 258| 16.829 | 3.213 | 0.200 | 2.438*  | 315 | 0.015 |
|                                | Informal relationship | 59 | 15.627 | 4.210 | 0.548 |          |     |       |
| Meta-parenting (Overall)        | Married    | 258| 69.252 | 10.712 | 0.667 | 2.517** | 315 | 0.012 |
|                                | Informal relationship | 59 | 65.068 | 14.567 | 1.896 |          |     |       |
| Non-meta-parenting (Ruminating)| Married    | 258| 12.791 | 2.732 | 0.170 | 2.819** | 315 | 0.005 |
|                                | Informal relationship | 59 | 11.627 | 3.368 | 0.438 |          |     |       |
Chand Singh (2021) on how meta-parenting of Indian parents affect adolescent’s outcomes with the meta-parenting total score (M = 64.41, SD = 10.938). The parents’ age in meta-parenting revealed significant differences in assessing, reflecting, and overall meta-parenting favour group of parents of 31 and above. One competing explanation could be justified by the fact that in Arab countries, people prefer to marry and have kids at younger ages (Englen & Pushman, 2011). Accordingly, parents above 31 might probably have more children and thus contribute significantly to assessing and reflecting on parenting practices. Similarly, a previous study indicated that parents with more children reported more reflection (Tamm et al., 2012). Another fact worth adding is that in countries with low incomes and difficult economic situations, such as Yemen, females, in contrast to males, have little to very few chances of school enrolment and tend to marry at ever young ages (Krishnan, 2014).

The findings of marital status suggest notable differences in the overall meta-parenting, problem-solving, and ruminating, and it favours married parents. The findings show that married parents contribute significantly to parenting practices, mainly problem-solving. Married parents are typically more engaged in solving problems than parents with informal relationships. These results contradict the study results of Ashiono and Mwoma (2015), which showed that parents’ marital status did not affect their parenting styles in Kenya. Similarly, some studies have shown that married parents are more likely to perform well in parenting (Pedro et al., 2012). The parents’ relationship is frequently regarded as being at the heart of the family, impacting all aspects of children and their behaviour (Easterbrooks & Emde, 1988; Wong & Kam, 2019), including problem-solving.

Parents’ educational attainment is a major index in parenting practices and is vastly connected with children’s behaviours and educational

| Variable | groups | M       | SD     | N   | Cases | Sum of Squares | df | F     | p    | η2   |
|----------|--------|---------|--------|-----|-------|----------------|----|-------|------|------|
| Assessing| University | 17.165  | 3.717  | 206 | Education | 72.578 | 2  | 2.277 | 0.104 | 0.014 |
|          | Vocational | 16.180  | 4.074  | 50  | Residuals | 5003.440 | 314|       |       |      |
|          | High school | 16.148  | 4.757  | 61  |           |            |    |       |       |      |
| Anticipating | University | 9.568   | 2.434  | 206 | Education | 4.915  | 2  | 0.390 | 0.677 | 0.002 |
|          | Vocational | 9.800   | 2.579  | 50  | Residuals | 1976.876 | 314|       |       |      |
|          | High school | 9.377   | 2.697  | 61  |           |            |    |       |       |      |
| Reflecting | University | 13.267  | 2.524  | 206 | Education | 85.564 | 2  | 6.214 |***| 0.002 |0.038 |
|          | Vocational | 11.900  | 2.367  | 50  | Residuals | 2161.963 | 314|       |       |      |
|          | High school | 12.541  | 3.112  | 61  |           |            |    |       |       |      |
| Problem-solving | University | 16.869  | 3.096  | 206 | Education | 50.256 | 2  | 2.133 | 0.120 | 0.013 |
|          | Vocational | 16.440  | 3.682  | 50  | Residuals | 3699.453 | 314|       |       |      |
|          | High school | 15.852  | 4.222  | 61  |           |            |    |       |       |      |
| Meta-parenting (Overall) | University | 69.738  | 10.805 | 206 | Education | 956.528 | 2  | 3.603 |*| 0.028 |0.022 |
|          | Vocational | 66.540  | 9.181  | 50  | Residuals | 41680.494 | 314|       |       |      |
|          | High school | 65.787  | 15.064 | 61  |           |            |    |       |       |      |
| Non-meta-parenting (Ruminating) | University | 12.869  | 2.765  | 206 | Education | 54.516 | 2  | 3.308 |*| 0.038 |0.021 |
|          | Vocational | 12.220  | 2.566  | 50  | Residuals | 2586.992 | 314|       |       |      |
|          | High school | 11.869  | 3.408  | 61  |           |            |    |       |       |      |

| Variable | Educational level | Gender | Significant test F (5, 311) | P | Significant groups differences |
|----------|------------------|--------|-----------------------------|----|-------------------------------|
|           | Mothers | Fathers |                              |    |                               |
| Assessing | University | 17.473 | 3.790 | 96  | 16.813 | 3.620 | 4.619***| <.001 | Significant |
|          | Vocational | 17.105 | 3.332 | 31  | 15.613 | 4.425 | 0.779 | 0.565 | Non-significant |
|          | High school | 15.091 | 5.703 | 28  | 17.393 | 2.961 | 1.625 | 0.153 | Non-significant |
| Anticipating | University | 9.627 | 2.346 | 96  | 9.500 | 2.542 | 0.779 | 0.565 | Non-significant |
|          | Vocational | 9.684 | 2.237 | 31  | 9.871 | 2.802 | 1.625 | 0.153 | Non-significant |
|          | High school | 9.273 | 2.875 | 28  | 9.500 | 2.517 | 1.625 | 0.153 | Non-significant |
| Reflecting | University | 13.391 | 2.472 | 96  | 13.125 | 2.588 | 4.583***| <.010 | Significant |
|          | Vocational | 11.895 | 2.208 | 31  | 11.903 | 2.495 | 4.583***| <.010 | Significant |
|          | High school | 11.667 | 3.313 | 28  | 13.571 | 2.545 | 4.583***| <.010 | Significant |
| Problem-solving | University | 16.673 | 3.104 | 96  | 17.094 | 3.088 | 6.610***| <.001 | Significant |
|          | Vocational | 15.579 | 3.115 | 31  | 16.968 | 3.945 | 6.610***| <.001 | Significant |
|          | High school | 14.818 | 5.028 | 28  | 17.071 | 2.610 | 6.610***| <.001 | Significant |
| Meta-parenting (Overall) | University | 69.436 | 10.850 | 96  | 70.083 | 10.800 | 6.610***| <.001 | Significant |
|          | Vocational | 67.263 | 10.066 | 31  | 66.097 | 8.738 | 6.610***| <.001 | Significant |
|          | High school | 62.152 | 18.175 | 28  | 70.071 | 8.810 | 6.610***| <.001 | Significant |
| Non-meta-parenting (Ruminating) | University | 12.273 | 2.889 | 96  | 13.552 | 2.458 | 3.683**| 0.003 | Significant |
|          | Vocational | 13.000 | 2.848 | 31  | 11.742 | 2.294 | 3.683**| 0.003 | Significant |
|          | High school | 11.303 | 4.035 | 28  | 12.536 | 2.380 | 3.683**| 0.003 | Significant |
success. In other words, if parenting is done well, childcare can be incredibly rewarding. The analysis of education variables on parenting showed significant statistics in reflecting, overall meta-parenting, and ruminating. These findings contradict Merrifield et al.'s (2015) research that showed education is not a significant variable for mothers in meta-parenting and is not associated with parent cognition (Hawk & Holden, 2006). However, the study's results replicate Fine's (1989) findings, indicating that education goes hand in hand with meta-parenting and promotes more deliberate thoughts. In addition, many studies studied the effect of parents' education level on children's educational achievements. 

The analysis of the gender and educational level in Yemen in parents associated with the four meta- and non-meta-parenting factors revealed significant maternal and paternal correlations in assessing, problem-solving, meta-parenting overall, and ruminating overall. On the one hand, educated mothers scored significantly in assessing, favouring university and vocational mothers. Conversely, educated fathers showed high scores in problem-solving, meta-parenting (overall), and ruminating favoured university and high school fathers. These findings support the former findings of the present study. It was previously reported, particularly in the analysis of meta-parenting on gender, that Yemenis mothers expressed significant scores in assessing. Concurrently, the results support Han's (2010) research, which revealed that mothers scored highly on assessing. The study's findings also demonstrated that fathers with higher educational attainments have significant scores in problem-solving, overall meta-parenting, and ruminating. This finding echoes the previous analysis of meta-parenting on gender, favouring fathers in problem-solving. Likewise, the Yemenis males, in contrast to females, had more opportunities for school enrolment, and in Yemenis family customs and instruction; Yemeni males, unlike western cultures, are in charge of the outside household parenting activities, which infers much more problems than the one of the insides (Krishnan, 2014).

4.1. Limitations and implications of the study

First, the current findings are based on samples from one urban area (i.e., Sana'a) in Yemen. However, using a supplementary web-based survey may strengthen the collection of broader data and proffer thorough information. Second, data from the present study were collected via a self-report measure; accordingly, future research should implement other observational or interviewing parenting data from multiple informants and thus avoid methodological bias. Third, due to the scarcity of topics in meta-parenting in the Yemeni context, further follow-up comparative and cross-cultural studies are warranted to validate and replicate the current study's findings. Another limitation holds that the number of males, who participated in the study, was few compared to females, and scores in answers of both genders were close in some reported data.

Despite the many limitations, this study has its strength; it is the first study that sought to analyze the meta-parenting factors in an Arab country living in severe economic crises such as famine, poverty, death, and social instability due to the civil war. Moreover, the study might be of utmost interest as the Yemeni population has discreet cultural customs pertinent to women and men to behave accordingly. Hence, future studies can also provide better recommendations that may promote the development of parenting programs and interventions for Yemeni families victimized by internal and external political divisions.

5. Conclusion

The current paper contributes and adds knowledge to the existing research literature. Prior studies examined the meta-parenting of Hawk and Holden (2006) and Wong and Kam (2019) and examined the validation according to the Yemeni contexts. As a result, the current study elucidated the positive relationships between the meta-parenting dimensions and meta-parenting in general with non-meta parenting (ruminating). Moreover, this work assesses the difference between mothers and fathers in meta-parenting and non-meta-parenting (ruminating). The researchers highlighted the potential cognitive difference between meta-parenting and non-meta-parenting practices, which showed significant differences in problem-solving and ruminating, favouring fathers.

Moreover, the significant differences came in favour of the parents with university qualifications in reflecting, meta-parenting (overall), and ruminating according to the educational level variable. According to this study, marital status influenced meta-parenting and non-meta-parenting cognitions and was reported significantly in problem-solving, meta-parenting (overall), and ruminating, favouring the married group. Parents' age categories were the most likely predictors of more thoughtful parenting, with parents aged more than 31 years. On the other hand, the study conciliated significant effects of the educational level variable (University-Vocational-High School) on gender (mothers and fathers) in assessing, problem-solving, meta-parenting (overall), and ruminating.

Declarations

Author contribution statement

Abdo Hasan AL-Qadri: Conceived and designed the experiments, performed the experiments, analyzed and interpreted the data, and wrote the paper.
Nadia Saraa: Performed the experiments; Wrote the paper.
Azzeddine Boudouaia: Contributed reagents, materials, analysis tools or data; Contributed reagents, materials, analysis tools or data; Wrote the paper.
Nuralieva Nargiza: Contributed reagents, materials, analysis tools or data; Wrote the paper.

Funding statement

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Data availability statement

The data that has been used is confidential.

Declaration of interest's statement

The authors declare no conflict of interest.

Additional information

No additional information is available for this paper.

Acknowledgement

The authors would like to thank the subsidy granted by Xi'an Eurasia University, School of Humanities and Education, representing the Executive Dean: Yang Chen, Vice Dean: Kou Yan, the Head of the Applied Psychology Department, Geng Wexiu, Zhang Junting, Su, Chen Pengfei, Liu Xi, Zeng Hong Yan, and all the applied Psychology Department staff. The authors would also like to thank all the participants and schools' principles for their active participation and collaboration in this study.

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