



## **The Parent-SmalQ Indonesia surveillance content validation involves monitoring and verifying physical activity behavior, sleep patterns, and dietary intake in children**

**Rizki Mulyawan<sup>1\*</sup>, Soni Nopembri<sup>2</sup>, Pasca Tri Kaloka<sup>3</sup>, Terence Buan Kiong Chua<sup>4</sup>, Low Seow Ting<sup>4</sup>, Michael Yong Hwa Chia<sup>4</sup>**

<sup>1</sup> Department of Sports Science, Faculty of Sport and Health Science, Universitas Negeri Yogyakarta, Jl. Colombo No. 1 Yogyakarta, 55281. Indonesia.

<sup>2</sup> Department of Physical Education, Health and Recreation, Faculty of Sport and Health Science, Universitas Negeri Yogyakarta, Jl. Colombo No. 1 Yogyakarta, 55281. Indonesia.

<sup>3</sup> Department of Physical Education for Elementary School, Faculty of Sport and Health Science, Universitas Negeri Yogyakarta, Jl. Colombo No. 1 Yogyakarta, 55281. Indonesia.

<sup>4</sup> Physical Education and Sport Science Academic Group, Nanyang Technological University, 50 Nanyang Avenue, 639798 Singapore.

\* Corresponding Author. E-mail: [rizkimulyawan@uny.ac.id](mailto:rizkimulyawan@uny.ac.id)

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**Abstract:** The 24-hour guidelines heavily consider the dietary intake, sleep patterns, and physical activity habits of children. This study aims to determine the validity of the Parent-SmalQ Indonesia content for each question item, facilitating clear communication, comprehension, and implementation as an assessment tool for investigating children's lifestyles, consists of physical activity habits, sleep patterns, and dietary intake (three domains). Methods: The research targets both children and their parents, integrating their behaviours into a cohesive unit of voluntary participants. This validity assessment employs the phases of the Content Validation Index (CVI) for specific computations. Results: The three evaluated indicators are generated from the clarity, relevance, and completeness of each question item, comprising a total of 20 questions, with 3 validation items for each question, derived from 6 domains (3 domains for children; 3 domains for parents). Results from content validation indicate that the CVI elements of clarity ( $0.80 > 0.78$ ), relevance ( $0.85 > 0.78$ ), and completeness ( $0.85 > 0.78$ ) were satisfactory. Conclusion: The Parent-SmalQ Indonesia questionnaire has achieved an adequate level of validity as a tool for assessing physical activity habits, sleep patterns, and dietary consumption. The Parent-SmalQ Indonesia questionnaire, verified for content, can predict children's behavior based on parental behaviours about physical activity, sleep, and dietary intake.

**Keywords:** Parent-SmalQ, surveillance, content validation physical activity, sleep pattern, dietary intake, children, parents.

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### **INTRODUCTION**

The existing condition in Indonesia remains contrary, since precise data on the movement patterns of primary school students is still unavailable. The 2023 Sport Development Index (SDI) assessment (Mutohir et al., 2023) revealed that the movement habits of the Indonesian population had diminished compared to the outbreak of the epidemic. The likelihood of having non-communicable diseases, including obesity and diabetes, has escalated significantly (Pratama, 2023). The elevated risk is closely correlated with findings from literature studies in Indonesia about prolonged screen time and lower physical activity in children, which are associated with inadequate sleep patterns (Fauziah et al., 2022;



Nopembri et al., 2023). This work is noteworthy since it clarifies the pandemic's influence on the active lifestyles of children, particularly in Indonesia. Regrettably, to at this point, several ideas aimed at mitigating sedentary behavior in children are still limited to prototypes, models, and literature reviews. Initiating its implementation in children requires a greater effort. This problem could threaten the Indonesian generation in the next years, coinciding with the rise of non-communicable illnesses such as obesity, which is more prevalent in Indonesia (Oktaviani et al., 2023; Rachmi et al., 2017; Tham et al., 2023).

The recommendations for 24 hours of daily movement have now tightened behavior around movement habits as well (Aw et al., 2022; Cliff et al., 2017; Quah et al., 2024; Tremblay et al., 2016). The 24-hour guideline has been extensively adopted in several countries, including Canada (Tremblay et al., 2016), Japan (Hyunshik et al., 2021), Australia (Cliff et al., 2017), Singapore (Chen et al., 2019; Quah et al., 2024), and Thailand (Liangruenrom et al., 2020). Countries with advanced economies are acutely aware of the risks associated with sedentary behavior that leads to non-communicable illnesses such as obesity. An interesting study links four primary subjects: physical activity patterns, cardiovascular capacity, exercise, and metabolic syndrome (Myers et al., 2019). This results from excessive sedentary behavior associated with gadget usage, leading to prolonged screen time without equivalent improvements in children's sports habits or physical activity, despite the potential of digital media to promote exercise through exergames (Calcaterra et al., 2023; Huang et al., 2017). Access to exergames is limited to prototypes and data collecting; therefore, the digitization of sports in Indonesia is progressing at a slow pace. Furthermore, while using virtual reality in schools is not impossible, it is difficult to execute (Bae, 2023; Lee & Lee, 2021; Utamayasa & Mardhika, 2024).

The significance of four primary factors regarding children's lifestyle (gadget usage), sleep patterns, and dietary habits during early development has been shown to be biased in earlier studies (Chia et al., 2019; Fauziah et al., 2022; Nopembri et al., 2023) as these investigations concentrated solely on children while neglecting parental behavior's role, despite parents serving as influences for children at home. Research indicates the significant influence of parental involvement on children's movement habits (De Brito et al., 2020; Skouteris et al., 2016), as interventions that engage parents have been shown to foster positive behaviors in children across various domains (Chia et al., 2022; Guo et al., 2022; Skouteris et al., 2016). To mitigate the risk of bias from prior investigations, the monitoring of child behavior will be enhanced through the inclusion of parents data, in order to determine correlations among family members and strengthen the data integrity to minimize bias impact. This ensures a more rigorous and controlled multipersonal approach during data collection and analysis, utilizing a combination of diverse data sources gathered throughout the study. This project aims to develop an instrument including four primary domains for each target topic, specifically children's lifestyle, physical activity habits, sleep patterns, and food intake, integrating both children and parents, resulting in a total of eight domains. The instrument must be verified as a baseline for assessing its content.

This study strives to determine the valid value by calculating the Content Validation Index (CVI) for each question item, based on recommendations for elementary school children adjusted to an inversely proportional phenomenon. The intention is to facilitate the communication, comprehension, and implementation of a measuring tool that explores children's lifestyles—specifically their gadget usage habits, physical activity, sleep patterns, and dietary intake—across two target subjects: children and parents, collectively forming a single research subject willing to participate voluntarily. It will be expected that during the next several years, children's behavior may be predicted based on parental behaviors regarding physical activity, sleep, and dietary intake, utilizing this questionnaire, which has undergone content validation for each domains.

## **METHODS**

The content validation procedure comprises six processes informed by previous studies (Yusoff, 2019): (a) Developing the content validation form; (b) Gathering an expert review panel; (c) Executing content validation; (d) Evaluating domains and items; (e) Scoring each item; and (f) Computing the Content Validity Index (CVI) (Yusoff, 2019). The six phases are elaborated upon in width, elucidating the process and completion of each stage for enhanced clarity and understanding.

This study has undergone an ethical clearance licensing procedure, granted with number T/21.1/UN34.9/KP.06.07/2024, by the Ethics Commission of the Directorate of Research and

Community Service at Universitas Negeri Yogyakarta, and has been declared ethically approved in accordance with the 7 WHO Standards.

### **Phase 1: Preparing the content validation document**

The initial phase of content validation involves preparing the form to guarantee that expert reviews provide explicit expectations and comprehension of the required duties. Another aspect is the incorporation of informed consent in the original Parent-SmalQ form, reflecting the subjects'—specifically the parents'—voluntary willingness to complete and fulfil informed consent at initial stage of questionnaire.

### **Phase 2: Expert Panel Selection**

Individuals assigned to expert panels responsible for evaluating and revising validation content methods of measurement have been chosen according to their professional expertise (Yusoff, 2019). According to prior literature highlighting the involvement of experts, a minimum of two experts is acceptable; however, it is advisable to include at least six experts. Based on these suggestions and researchers' experiences, it is advisable to include a minimum of 6 and a maximum of 10 participants (Davis, 1992; Lynn, 1986; Polit et al., 2007; Polit & Beck, 2006; Yusoff, 2019). This study included professionals, including teachers and parents, aligned with the questionnaire's focus on the involvement of parents in overseeing physical activity, sleep patterns, and dietary habits. Seven teachers and three parents, engaging with children in an educational setting, has a superior understanding of the dynamics and viewpoints of student parents, which may be correlated with the professions and occurrences observed in every connection with students at school.

**Table 1.** Number of experts and implications of CVI scores

<b>Amount of expertise</b>	<b>Accepted CVI point</b>	<b>Sources recommendation</b>
2	At least 0.80	Davis (1992)
3-5	Must be 1	Polit & Beck (2006), Polit et al., (2007)
≥ 6	At least 0.83	Polit & Beck (2006), Polit et al., (2007)
6-8	At least 0.83	Lynn (1986)
≥ 9	At least 0.78	Lynn (1986)

### **Phase 3: Content Validation**

Content validation is conducted by direct interpersonal interaction. Content is transmitted in hardcopy format without utilizing online forms; nonetheless, all instructions are articulated clearly and can be accessed on the homepage of the validation content form. This can be achieved through many factors of finance, time allocation, and the mitigation of bias using online forms. The response time during form completion is optimal, since experts are instructed to initially access all validation content pages before being permitted to inquire about each item on the validation content form.

### **Phase 4: Evaluating content and assessing items**

Experts are requested to conduct an accurate assessment of the domain and its components prior to providing scores to each item. This study encompasses eight domains addressing children lifestyle, physical activity behaviour, sleep patterns, and dietary intake in children (three domains for children) and corresponding inquiries targeted to parents (four domains for parents). Experts are urged to submit oral or written feedback to enhance the relevance of the items to the concerns of the specific topic. All feedback is considered as valuable information to improving the domain and its components.

### **Phase 5: Scoring each items**

Each question is evaluated based on three criteria: clarity, relevance, and completeness. Each expert must evaluate the three components of each question item, comprising 20 questions. The assessment scale ranges from 1 to 4, with 1 indicating unclear, 2 representing fairly clear, 3 showing pretty clear, and 4 demonstrating extremely clear.

**Table 2.** Definition and formula of I-CVI, S-CVI/Ave. and S-CVI/UA

CVI Indicator	Definition	Formula
<b>I-CVI</b> (item-level content validity index)	The proportion of content experts giving item a relevance rating of 3 or 4	<b>I-CVI</b> = (agreed item)/(number of expert)
<b>S-CVI/Ave</b> (scale-level content validity index based on the average method)	The average of the I-CVI scores for all items on the scale or the average of proportion relevance judged by all experts. The proportion relevant is the average of relevance rating by individual expert.	<b>S-CVI/Ave</b> = (sum of I-CVI scores)/(number of item) <b>S-CVI/Ave</b> = (sum of proportion relevance rating)/(number of expert)
<b>S-CVI/UA</b> (scale-level content validity index based on the universal agreement method)	The proportion of items on the scale that achieve a relevance scale of 3 or 4 by all experts. Universal agreement (UA) score is given as 1 when the item achieved 100% experts in agreement, otherwise the UA score is given as 0.	<b>S-CVI/UA</b> = (sum of UA scores)/(number of item)

### RESULTS AND DISCUSSION

There are two types of CVI: the item-level CVI (I-CVI) and the scale-level CVI (S-CVI). Two methodologies for calculating S-CVI include the average I-CVI score for all items on the scale (S-CVI/Ave) and the ratio of items on the scale that obtain a relevance rating of 3 or 4 from all experts (S-CVI/UA). The definition and formula of the CVI index are shown in Table 1. Prior to computing the CVI, the relevance ratings or validation scores must be recoded to 1 for experts assigning relevance points of 3 or 4, and to 0 for those assigning points of 1 or 2, as seen in Table 2. The correct assessments of the item scale by 10 experts are displayed in Tables 3, 4, and 5 to demonstrate the calculation of various CVIs. This example demonstrates the calculation of the CVI index, as shown in Table 1, with data from Tables 3, 4, and 5, derived from the assessment of the clarity, relevance, and completeness indicators. Approximately 60 items are assessed across 20 questions within four main domains for two target groups: children and parents.

**Table 3.** CVI: Clarity indicators

Item	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Expert 7	Expert 8	Expert 9	Expert 10	Expert in agreement	I-CVI	UA
Q1	1	1	1	1	1	1	1	1	1	1	10	1	1
Q2	1	1	1	1	1	1	1	1	1	1	10	1	1
Q3	1	1	1	1	1	1	1	1	1	1	10	1	1
Q4	1	1	1	1	1	1	1	1	1	1	10	1	1
Q5	1	1	1	1	1	1	1	1	1	1	10	1	1
Q6	1	1	1	1	1	1	1	1	1	1	10	1	1
Q7	1	0	1	1	0	1	1	1	0	1	7	0.7	0
Q8	1	1	1	1	1	1	1	1	1	1	10	1	1
Q9	1	1	1	1	1	1	1	1	1	1	10	1	1
Q10	1	1	1	1	1	1	1	1	1	1	10	1	1
Q11	1	1	1	1	1	1	1	1	1	1	10	1	1
Q12	1	1	1	1	1	1	0	0	1	1	8	0.8	0
Q13	1	1	1	1	0	0	1	1	1	1	8	0.8	0
Q14	1	1	1	1	1	1	1	1	1	1	10	1	1
Q15	1	1	1	1	1	1	1	1	1	1	10	1	1
Q16	1	1	1	1	0	1	1	1	0	1	8	0.8	0
Q17	1	1	1	1	1	1	1	1	1	1	10	1	1
Q18	1	1	1	1	1	1	1	1	1	1	10	1	1
Q19	1	1	1	1	1	1	1	1	1	1	10	1	1
Q20	1	1	1	1	1	1	1	1	1	1	10	1	1
Proportion Relevance	1	0.95	1	1	0.85	0.95	0.95	0.95	0.9	1	S-CVI/Ave S-CVI/UA	0.955	0.8
Average proportion of items judged as relevance across the tex experts											0.955		

**Table 4.** CVI: Relevance indicators

Item	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Expert 7	Expert 8	Expert 9	Expert 10	Expert in agreement	I-CVI	UA
Q1	1	1	1	1	1	1	1	1	1	1	10	1	1
Q2	1	1	1	1	1	1	1	1	1	1	10	1	1
Q3	1	1	1	1	1	1	1	1	1	1	10	1	1
Q4	1	1	1	1	1	1	1	1	1	1	10	1	1
Q5	1	1	1	1	1	1	1	1	1	1	10	1	1
Q6	1	1	1	1	1	1	1	1	1	1	10	1	1
Q7	1	1	1	1	1	1	1	1	0	1	9	0.9	0
Q8	1	1	1	1	1	1	1	1	1	1	10	1	1
Q9	1	1	1	1	1	1	1	1	1	1	10	1	1
Q10	1	1	1	1	1	1	1	1	1	1	10	1	1
Q11	1	1	1	1	1	1	1	1	1	1	10	1	1
Q12	1	1	1	1	1	1	1	1	1	1	10	1	1
Q13	1	1	1	1	1	1	1	1	1	1	10	1	1
Q14	1	1	1	1	1	1	1	1	1	1	10	1	1
Q15	1	1	1	1	1	1	1	1	1	1	10	1	1
Q16	1	1	1	1	1	1	1	1	0	1	9	0.9	0
Q17	1	1	1	1	1	1	1	1	1	1	10	1	1
Q18	1	1	1	1	1	1	1	1	1	1	10	1	1
Q19	1	1	1	1	1	1	1	1	1	1	10	1	1
Q20	1	1	1	1	1	1	1	1	1	1	10	1	1
Proportion Relevance	1	1	1	1	1	1	1	1	0.9	1	S-CVI/Ave S-CVI/UA	0.965	0.85

Average proportion of items judged as relevance across the tex experts  
0.965

**Table 5.** CVI: Comprehension indicators

Item	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Expert 7	Expert 8	Expert 9	Expert 10	Expert in agreement	I-CVI	UA
Q1	1	1	1	1	1	1	1	1	1	1	10	1	1
Q2	1	1	1	1	1	1	1	1	1	1	10	1	1
Q3	1	1	0	1	0	1	1	1	1	1	8	0.8	0
Q4	1	1	1	1	0	1	1	1	1	1	10	1	1
Q5	1	1	1	1	1	1	1	1	1	1	10	1	1
Q6	1	1	1	1	1	1	1	1	1	1	10	1	1
Q7	1	0	1	1	0	1	1	1	0	1	7	0.7	0
Q8	1	1	1	1	1	1	1	1	1	1	10	1	1
Q9	1	1	1	1	1	1	1	1	1	1	10	1	1
Q10	1	1	1	1	1	1	1	1	1	1	10	1	1
Q11	1	1	1	1	1	1	1	1	1	1	10	1	1
Q12	1	1	1	1	1	1	1	1	1	1	10	1	1
Q13	1	1	1	1	1	1	1	1	1	1	10	1	1
Q14	1	1	1	1	1	1	1	1	1	1	10	1	1
Q15	1	1	1	1	1	1	1	1	1	1	10	1	1
Q16	1	1	1	1	0	1	1	1	0	1	8	0.8	0
Q17	1	1	1	1	1	1	1	1	1	1	10	1	1
Q18	1	1	1	1	1	1	1	1	1	1	10	1	1
Q19	1	1	1	1	1	1	1	1	1	1	10	1	1
Q20	1	1	1	1	1	1	1	1	1	1	10	1	1
Proportion Relevance	1	0.95	0.95	1	0.8	1	1	1	0.9	1	S-CVI/Ave S-CVI/UA	0.965	0.85

Average proportion of items judged as relevance across the tex experts  
0.965

Using the information that was gathered in Tables 3, 4, and 5, as well as the calculations that were performed in accordance with the CVI measurement recommendations (Yusoff, 2019), it is possible to draw the conclusion that I-CVI, S-CVI/Ave, and S-CVI/UA all meet the level of satisfaction. This indicates that the questionnaire scale has attained a level of content validity that is satisfactory. When compared to the findings of validity calculations using Cronbach Alpha, this CVI calculation is more comprehensive. This is due to the fact that the elements are evaluated with different pattern, not only regarding the overall validity, but also specific in the domain and question items. The findings of the CVI for the three components of evaluation, namely clarity, relevance, and completeness, were achieved consecutively above the bottom limit (Lynn, 1986), which was at least 0.78. The data that was gathered from the results of the content validation on the CVI characteristics of completeness (0.85 > 0.78), relevance (0.85 > 0.78), and clarity (0.80 > 0.78).

As a result of the fact that content validity is very important in order to guarantee the overall validity of an assessment, it is recommended that a systematic approach to content validation be carried out, which is founded on evidence and the most effective techniques (Yusoff, 2019). By putting an emphasis on the discussion of the content validation of a questionnaire instrument concerning the habits of physical activity, sleep patterns, and eating patterns in children and parents, this article has provided a methodical and evidence-based approach to conducting proper content validation. This has been done since the article was written. This measuring instrument is an update of previous findings (Chia et al., 2019; Fauziah et al., 2022; Nopembri et al., 2023), and it is a cutting-edge innovation in an effort to

measure while eliminating the risk of bias during data collection and analysis. The Surveillance of Digital Media Habits in Early Childhood Questionnaire (SMALLQ®) was revised to become the Parent-SmalQ. This was done due to the discovery which is throughout the investigation that was carried out in earlier studies, issues were found in the way that the questionnaire was filled out and the way that data was collected. In the end, the content in Parent-SmalQ was able to address the weaknesses that were discovered as well as the various considerations that emerged from the results of the SMALLQ study evaluation, control and follow-up phase. Parent-SmalQ is comprised of four primary domains, which include lifestyle (screen-time), physical activity habits, sleep patterns, and food intake. Additionally, it is administered to two target subjects, which are children and parents, therefore there are a total of eight domains.

The Parent-SmalQ Indonesia simply requires numerical responses for some of the questions. In order to make the process of filling out the twenty questions that appear easier, the information and instructions have been communicated in a very simple and straightforward manner. In general, components of children's lifestyle habits, such as the amount of time they spend in front of screens and the amount of physical activity they engage in, require data throughout the weekdays and weekends, as well as information regarding their sleeping patterns and the foods they consume. Based on the findings of various previous literature studies on parent-child interactions (Guo et al., 2022; Skouteris et al., 2016; Zhao et al., 2018), this questionnaire is considered to be able to assist as an initial step in the process of resolving the issue of sedentary habits. This is accomplished by gaining an understanding of the similarities in habits that exist within the smallest unit, which is the family. In particular, the behavior of children and parents is a cause for concern at the present moment due to the close relationship that exists among them.

Parents should be actively involved in the daily activities of their kids as much as possible, on illustrating responsible use of gadgets (Koga et al., 2023), physical activity (Koga et al., 2023; Pertiwi et al., 2022; Wong et al., 2020), regular bedtime reminders (Xu et al., 2016; Zisapel, 2018), and consuming nutritious foods (Ekawati et al., 2020; Scaglioni et al., 2018). According to previous study, reducing the risk of non-communicable diseases—which are influenced by an individual's fitness level (Ekawati et al., 2020),—through controlling these four primary domains can help overall future prediction and the growth of kids towards maturation. Hence, this questionnaire is highly valuable for its influence on children's future well-being, as it aims to promote lifelong healthy behavior and thereby reduce the prevalence of non-communicable and degenerative illnesses. As the family becomes more prominent, parents will make small changes within the family to impact their children (Guo et al., 2022). This is to enhance and boost the implementation of movement recommendations based on the 24-hour guideline for daily recommendations (Hyunshik et al., 2021; Quah et al., 2024) and the implementation of literature reviews derived from WHO recommendations for weekly recommendations for children (Sommer et al., 2021; World Health Organization, 2020)

## **CONCLUSION**

The Parent-SmalQ Indonesia questionnaire, can be implemented to assess children's lifestyle (screen time), physical activity habits, sleep patterns, and dietary intake, exhibited a satisfactory level of validity. This questionnaire is applicable to those interested in the four domains of gadget usage behavior, physical activity, sleep patterns, and dietary intake, particularly in validating the behaviors of children and parents. The value of content validity is crucial for ensuring the overall validity of an assessment; hence, a systematic approach to content validation must be undertaken based on evidence and best practices.

## **CONFLIC OF INTEREST**

There are no conflicts of interest related to this research or the publication of this manuscript

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