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The Translation and Validation of the Children's Health Internet Research Parental Inventory (CHIRPI) in Greek: A Crucial Tool for Evaluating Parent Internet Use for Children's Health Information

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Abstract

The internet is now the primary mode of information exchange worldwide. Online health information-seeking behavior (e-HISB) has become a prevalent practice, especially among parents concerned with their children's health, creating both opportunities and risks. **Objective:** The present study aims to translate and culturally adapt the CHIRPI questionnaire into Greek and conduct a comprehensive psychometric validation, including analyses of internal consistency, test-retest reliability (temporal stability), and inter-rater reliability. The adapted tool is further pilot-tested for its utility in measuring parental internet use concerning child health information. **Methods:** The translation, validation, and pilot study of the questionnaire were conducted in accordance with internationally recommended procedures. CHIRPI was translated into Greek using forward-backward translation and was culturally adapted. A pilot sample of 105 parents (children aged 0–10) participated. The majority of participants were mothers (66.7%), aged 31–40 years, residing in urban areas, and they held tertiary or postgraduate degrees. Internal consistency was measured with Cronbach's alpha, test-retest reliability with the ICC, and inter-rater reliability with the kappa coefficient. Item responses were also analyzed in relation to demographic factors. **Results:** The CHIRPI Greek version demonstrated excellent internal consistency (Cronbach's $\alpha = 0.91$; all subscales had α values greater than 0.70). Test-retest reliability (ICC = 0.632–1.000) and inter-rater reliability (kappa = 0.615–1.000) indicated moderate to excellent agreement. The scale showed satisfactory psychometric properties, supporting its use in Greek populations. Higher education was linked to more frequent health-related internet searches and increased distress ($p < 0.001$). **Conclusions:** The CHIRPI Greek version is a valid and reliable tool for assessing parental online health information-seeking behavior related to children's health among Greek-speaking populations. As the first standardized tool in Greek, it fills a critical methodological gap in eHealth research.

Keywords: CHIRPI; parental behavior; online health information; psychometric validation; Greek translation; pediatric information-seeking



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1. Introduction

The search for information regarding health issues is essential for assessing, maintaining, and changing one's health and health behaviors [1,2]. Medical information can be gathered from formal sources, such as healthcare providers, as well as informal sources like family or friends or other media sources [3]. The internet has emerged as an alternative option in recent years, becoming the primary means of information exchange worldwide. Unexpectedly, it has also become a significant source of health-related information (HRI) [4,5]. However, the role of the internet in seeking information related to health issues comes with challenges. While it serves a purpose by providing information that was not readily accessible in the past, it also poses the risk of misinformation, underscoring the need for further research and understanding [6]. This highlights the importance of caution and the need for additional research in this field.

Parents who are not healthcare professionals feel that the internet is a powerful tool for obtaining information about their children's health [7]. They believe that the internet provides reliable and up-to-date health information and, therefore, the necessary knowledge to make informed decisions about their children's health. Information from the web can significantly impact a child's health, as it may determine whether and when the family will seek medical assistance [8]. Parents may also turn to the web when dissatisfied with their doctor's information or to look for a different perspective [2]. However, being aware of the potential downsides to relying on online health information, including significant risks of misinformation and cyberchondria, is crucial [9,10].

Several tools have been developed to evaluate this phenomenon and appraise its implications, including the eHealth Literacy Scale (eHEALS) [11] and the Cyberchondria Severity Scale (CSS) [12], but not all of them have been adequately validated. Despite their relevance, these tools were not specifically designed to assess parental behavior, unlike CHIRPI. A recent systematic review examined the characteristics of these tools, including completion methods, psychometric properties, reliability, validity, dimensions, and appropriateness for measuring parental children's health information-seeking behavior. Most of the recently developed tools are brief and self-administered and display decent psychometric characteristics [11–16]. Among the evaluated tools, the Children's Health Internet Research, Parental Inventory (CHIRPI) was found to be one of the most appropriate [17]. The original German version of CHIRPI demonstrated strong psychometric properties, including a Cronbach's alpha of 0.89 across the total scale. To our knowledge, it has not yet been widely translated into other languages, highlighting the importance of the present Greek adaptation.

CHIRPI is an instrument reflecting current digital health behaviors and parental engagement with online content. It is brief and easy to complete, minimizing respondent burden and enhancing response rates, while it is self-administered, allowing for flexible application. Most importantly, CHIRPI is specifically designed to measure parental online health information-seeking behavior concerning their children's health, making it highly aligned with the aims of the present study. Finally, it demonstrates strong psychometric properties, with proven reliability and validity, which is essential for ensuring the quality and interpretability of the collected data.

These characteristics collectively positioned CHIRPI as the most suitable tool for translation, cultural adaptation, and implementation in the context of Greek-speaking populations. Our study aimed to translate, validate, culturally adapt, and assess the psychometric properties of the CHIRPI questionnaire in the Greek language and specifically analyze its internal consistency, temporal stability, and inter-rater reliability. Additionally, we sought to assess the feasibility of using this questionnaire in Greek and to ensure that the

translated tool is both practically applicable and methodologically sound for conducting research among Greek-speaking populations.

2. Materials and Methods

2.1. The CHIRPI Scale

The CHIRPI scale, developed in 2020 by Antonia Barke and Bettina Doering, can be completed by parents within approximately 5 to 10 min and uses questions answered via a Likert scale (1 = never to 5 = always) that indicate how often parents exhibit a specific behavior or experience a particular situation [17]. CHIRPI consists of 21 items, organized into 3 subscales of 7 items each, describing the cognitive, emotional, and behavioral aspects of parents' online searches for information regarding their children's health. The subscales are as follows: "Distress," "Symptom Focus," and "Implementing Advice". Specifically, the subscale "Distress" measures the negative emotional consequences that parents experience when searching the internet for information related to their children's health, such as anxiety, irritation, difficulty sleeping, and interference with their daily activities. Additionally, the subscale "Symptom Focus" captures the search behavior adopted by parents to find the causes or treatment for a presumed illness when any physical change occurs in their children. The subscale "Implementing Advice" measures the tendency of parents to apply advice based on online information, such as consulting their child's doctor to prescribe a specific medication or undergo certain diagnostic procedures. Example items reflecting these dimensions include statements such as the following: "I find it hard to relax after searching online for health information concerning my child." (Distress). "When my child displays any symptom, I search on the Internet for information about it." (Symptom Focus). "I ask my child's doctor to prescribe particular drugs that I have read about online." (Implementing Advice).

2.2. Translation, Validation, and Cultural Adaptation

Prior to the translation process, the creators of CHIRPI, Antonia Barke and Bettina K. Doering, were contacted and informed via email about the purpose of this research. Written consent was requested from Antonia Barke for the translation and adaptation of the scale into the Greek language. Permission was granted electronically on 1 November 2022. The translation process of CHIRPI into Greek lasted less than one month, from 30 June to 18 July 2022. The translation process was based on the internationally accepted methodology, as outlined by the World Health Organization (WHO) [18]. Specifically, it involved the Forward and Blind Backward Translation of the tool, with the evaluation of the various versions and a pilot test to assess face validity. Regarding the Forward Translation, the CHIRPI tool was translated from English to Greek by two independent, bilingual translators with a high level of proficiency in English, who reside permanently in Greece and whose native language is Greek. The two translators created two separate printed translations, and following comparison, they were merged to create a final version of the translated questionnaire in Greek (1st reconciliation version). The translators worked closely with the research team (D.M.P., G.N., S.I., G.B.), who are medical professionals, to ensure the accurate rendering of medical terms. Also, the researchers (D.M.P., G.N.) discussed ambiguous or disputed items with the instrument developers as appropriate. No significant discrepancies arose regarding the final form of the translated Greek questionnaire. The researchers (D.M.P., G.N.) made the final decision on some minor discrepancies that existed in the final form of the translated Greek questionnaire. Thus, this final version was translated back into the original foreign language (backward translation), that is, English, by a bilingual individual whose native language is English, who permanently resides in Greece, and who was unfamiliar with the original version of the questionnaire. Finally, the

backward translation was sent to the initial authors of the questionnaire for comments and feedback. The Greek version of the questionnaire was finalized after the review committee (D.M.P., G.N., S.I., G.B.) resolved all discrepancies. Appendix A presents the English and the Greek versions of the questionnaire, and the final format of the Greek questionnaire can be found in the Supplementary materials section.

The translated questionnaire was pre-evaluated in a small-scale sample of 12 participants, who were Greek-speaking parents of young children aged 0–10 years, selected through purposive sampling. Individual, qualitative semi-structured interviews were conducted to explore the participants' understanding of all the questionnaire items. To ensure face validity, a cognitive debriefing process was implemented. Participants were asked to read each item aloud, paraphrase it in their own words, and comment on its clarity, relevance, and emotional tone. The evaluation aimed to identify misunderstandings, ambiguities, or challenges that participants might face while completing the questionnaire [19]. Items that were perceived as confusing or ambiguous would have been discussed by review committee with the original authors of CHIRPI and revised where necessary. However, no such difficulties were reported during this process, and therefore no changes were deemed necessary. Subsequently, to validate the questionnaire for the Greek-speaking population, a pilot study was conducted on a sample of 105 parents from the target population [20].

Validation was conducted by assessing reliability (evaluation of random error, precision, reproducibility, repeatability, and consistency) [21] and test–retest reliability. Internal consistency was examined using Cronbach's alpha, and test–retest reliability was assessed through the intraclass correlation coefficient (ICC) after the second completion of the questionnaire by 100% of the participants one week later. For this test–retest reliability process, the order of the questions was changed to ensure that participants would not remember their responses from the first completion.

Demographic questions were added to the questionnaire regarding age, gender, education level, place of permanent residence, family health status, and whether the parents' profession is related to any medical or paramedical profession.

2.3. Sample and Data Collection

As part of this study, the English version of the questionnaire was validated in Greek by 105 parents whose children were brought to the Pediatric Emergency Department of the University Hospital of Heraklion, Crete, Greece. Its implementation occurred from August 2022 to early January 2023. The researcher responsible for distributing the questionnaires asked the parents of children who had already been examined by the doctors to participate in the current study. The researcher informed them about the purpose of this research, briefly described the questionnaire, and assured them of their anonymity. Respondents were given a "quick response" code (QR code), which redirected the user to a consent form document. After giving consent, they were directed to a coded questionnaire hosted on a secure Google Form. The researcher supported the participants with the process if needed. Each questionnaire was assigned a unique identification number. Appropriate measures were taken to protect the anonymity of the subjects. To assess test–retest reliability, the researchers decided to send the questionnaire via email after seven (7) days to all parents who had completed the questionnaire ($n = 105$) without notifying them prior. The seven (7)-day interval was considered appropriate for the parents to respond to the questionnaire without forgetting their experience or recalling the answers they provided the first time they completed the questionnaire, thus avoiding memory bias. Additionally, the order of the questions was changed to ensure that participants would not remember their answers from the first completion of the questionnaire. A small number of parents required a follow-up email to be sent within seven (7) days, while five individuals who

did not respond to this gentle reminder received a phone reminder one (1) week after the email was sent. Thus, the electronic method used in the second phase of completing the questionnaire, combined with phone reminders, ensured a complete response rate (100%) for the second phase of this study (retest).

2.4. Exclusion Criteria

The parents of children older than ten years, parents of children whose medical conditions had deteriorated to the extent that admission to a Pediatric Intensive Care Unit was required (to avoid potential stress-related bias), and parents who were healthcare professionals were excluded from this study.

2.5. Data Analysis

The data collected from the questionnaires during the initial test and the retest were coded and entered into a spreadsheet (Microsoft Office Excel). An analysis of the research data was conducted using IBM SPSS 28.0 software. The sample size needed was calculated to be 98 (sensitivity of 90%, specificity of 80%, α level of 0.05). A power analysis was conducted prior to data collection to estimate the required sample size. The analysis was based on the expected psychometric evaluation criteria and aimed at ensuring adequate statistical power for detecting moderate to high internal consistency (Cronbach's $\alpha > 0.80$) and test–retest reliability. Using a confidence level of 95% ($\alpha = 0.05$), power of 0.80, expected sensitivity of 90%, and specificity of 80%, the minimum sample size was calculated to be 98 participants. The final sample ($n = 105$) exceeded this requirement, providing sufficient statistical power for the reliability analyses conducted in this study. The internal consistency reliability coefficients (Cronbach's α), test–retest reliability [intraclass correlation coefficient (ICC)], and inter-rater reliability (kappa) were estimated for each subscale and the CHIRPI overall, according to the 5-point Likert scale. Correlation analysis was performed using Pearson's test. Due to the exploratory nature of the individual questions, the statistical significance level was set at a p -value of less than 0.0023, based on the Bonferroni Correction for Multiple Comparisons.

3. Results

3.1. Data Screening

A total of 130 parents were approached, out of whom 110 completed the online questionnaire (response rate 84.6%). Two (2) subjects refused to participate in this research, citing that they do not know how to read or understand Greek adequately. Five of these questionnaires were excluded because the parent was a healthcare professional. No child required admission to the Pediatric Intensive Care Unit. Therefore, 105 parents participated in both phases of the questionnaire validation.

3.2. Participant Characteristics

Table 1 shows the basic characteristics of the participants. The majority of the sample consisted of females. Most parents were aged 31–40, married, and residing in an urban center or city (Table 1).

Table 1. Participant demographic characteristics.

		n	%
Gender	Male	35	33.33
	Female	70	66.67
Age Group	Up to 24 years old	1	0.95

Table 1. *Cont.*

		n	%
	25–30 years old	17	16.19
	31–40 years old	49	46.67
	41–50 years old	34	32.38
	Over 51 years old	4	3.81
Marital Status	Married	101	96.19
	Single	1	0.95
	Divorced	3	2.86
	Widowed	0	0.00
Educational Level	No formal education	5	4.76
	Primary school	0	0.00
	Middle school	0	0.00
	High school	28	26.67
	Post-secondary education (craft training)	17	16.19
	Tertiary education (college, university)	39	37.14
	Postgraduate/master's/doctorate	16	15.24
Place of Residence	Urban center/city	80	76.19
	Rural area/village	25	23.81
Chronic Disease in Family	None	85	80.95
	Mother	9	8.57
	Father	2	1.90
	Child aged 0–10 years	9	8.57
	Sibling (older)	2	1.90

Values are expressed as absolute numbers (n) and percentages (%).

3.3. Internal Consistency

The Cronbach's alpha reliability index, which measures the internal consistency of the CHIRPI questionnaire in Greek, was found to be 0.91 for participants in the first phase of this study ($n = 105$) and ranged from 0.91 to 0.97 for the individual subscales, meeting the criterion of >0.70 in all cases. In the original questionnaire, Cronbach's alpha was found to be 0.89 during the corresponding analysis, indicating a strong mutual relationship among the items. The extraction of any question did not improve the internal consistency of the Greek version of this scale (Table 2).

Table 2. Internal consistency reliability—Cronbach's alpha.

	Translated Scale	Official Scale
	Cronbach's Alpha	Standardized Alpha
Distress	0.97	0.89
Symptom focus	0.97	0.87
Implementing advice	0.91	0.74
CHIRPI (total scale)	0.91	0.89

3.4. Test–Retest Reliability

The intraclass correlation coefficient (ICC) of individual questions ranged from 0.632 to 1.000 (Table 3). This robust positive correlation indicates the presence of test–retest reliability.

Table 3. Test–retest reliability—test–retest intraclass correlation coefficient.

	Test–Retest ICC Intraclass Correlation Coefficient	Lower Bound–Upper Bound
Question 1 (1a–1b)	0.858	0.798–0.901
Question 2 (2a–2b)	1.000	1.000–1.000
Question 3 (3a–3b)	0.705	0.594–0.789
Question 4 (4a–4b)	0.862	0.803–0.904
Question 5 (5a–5b)	0.632	0.502–0.735
Question 6 (6a–6b)	0.899	0.855–0.930
Question 7 (7a–7b)	0.862	0.804–0.904
Question 8 (8a–8b)	0.778	0.690–0.844
Question 9 (9a–9b)	0.920	0.884–0.945
Question 10 (10a–10b)	0.884	0.834–0.920
Question 11 (11a–11b)	0.865	0.807–0.906
Question 12 (12a–12b)	0.751	0.653–0.823
Question 13 (13a–13b)	0.657	0.533–0.753
Question 14 (14a–14b)	0.888	0.840–0.923
Question 15 (15a–15b)	0.853	0.791–0.898
Question 16 (16a–16b)	0.839	0.772–0.888
Question 17 (17a–17b)	0.817	0.742–0.872
Question 18 (18a–18b)	0.885	0.836–0.921
Question 19 (19a–19b)	0.797	0.714–0.857
Question 20 (20a–20b)	0.759	0.664–0.830
Question 21 (21a–21b)	0.882	0.831–0.918

a: Responses from the completion of the 1st questionnaire. b: Responses from the completion of the 2nd questionnaire.

3.5. Inter-Rater Reliability

The kappa coefficient was found to range from 0.615 to 1.00, which indicates significant to maximum reliability between the two repeated assessments of the same measure (Table 4).

Therefore, the satisfactory reliability coefficients of the scale supported the appropriate adaptation of the questionnaire for the Greek population.

Table 4. Inter-rater reliability—kappa.

	Kappa
Question 1 (1a–1b)	0.743
Question 2 (2a–2b)	1.000
Question 3 (3a–3b)	0.649
Question 4 (4a–4b)	0.685
Question 5 (5a–5b)	0.615
Question 6 (6a–6b)	0.717
Question 7 (7a–7b)	0.680
Question 8 (8a–8b)	0.734
Question 9 (9a–9b)	0.791
Question 10 (10a–10b)	0.757
Question 11 (11a–11b)	0.726
Question 12 (12a–12b)	0.704
Question 13 (13a–13b)	0.711
Question 14 (14a–14b)	0.713
Question 15 (15a–15b)	0.684
Question 16 (16a–16b)	0.878
Question 17 (17a–17b)	0.703
Question 18 (18a–18b)	0.662
Question 19 (19a–19b)	0.654
Question 20 (20a–20b)	0.757
Question 21 (21a–21b)	0.744

a: Responses from the completion of the 1st questionnaire. b: Responses from the completion of the 2nd questionnaire.

3.6. The Results Derived from the Validation Study

The results from this sample were analyzed to explore patterns in internet-seeking behavior and their association with parents' personal and demographic characteristics. To explore how demographic characteristics affect online behavior, we conducted subgroup analyses comparing CHIRPI responses across educational levels. Although no full correlation table was created, certain items showed statistically significant trends (Table 5). People with a high educational level were defined as those who had completed at least some higher education or who held a master's/doctoral degree. In contrast, individuals who either had no formal education or had completed only primary school, secondary school, high school, or post-secondary education, non-university, were classified as having a lower level of education.

Table 5. Educational differences in CHIRPI responses.

Item (CHIRPI Question)	Behavior Assessed	Educational Group	% Reporting Behavior	<i>p</i> -Value
Q9: “After I have searched online for information about illnesses or symptoms concerning my child, I feel more anxious and distressed than before.”	Distress	Tertiary/Postgraduate	11% (vs. 38%) reported “never”	<0.01
Q11: “After searching online for health information, I ask teachers or nursery staff for their help in observing my child’s symptoms.”	Implementing Advice	All	52.4% reported “never”	<0.007
Q5: “After I have searched online for health information, I ask teachers or nursery staff for help in implementing some of the recommendations.”	Implementing Advice	Low Levels	74% reported “never”	<0.004
Q14: “When searching online for health information relevant to my child, I am particularly interested in possible causes for the illness.”	Symptom Focus	High Levels	92.7% (vs. 60%) reported yes, even if “rarely”	<0.001

Notably, responses to Question 9—“After I have searched online for information about illnesses or symptoms concerning my child, I feel more anxious and distressed than before”—revealed that higher educational levels were significantly associated with increased post-search anxiety. Specifically, parents with higher education levels reported greater distress following online searches compared to those with lower educational attainment ($p < 0.01$).

Furthermore, responses to Question 11—“After searching online for health information, I ask teachers or nursery staff for their help in observing my child’s symptoms”—indicated a statistically significant trend. Most participants across all educational levels (52.4%) reported that they “1—never” seek such assistance. However, there was a tendency for individuals with higher education to do so more frequently ($p < 0.007$).

Similarly, the results of Question 5—“After I have searched online for health information, I ask teachers or nursery staff for help in implementing some of the recommendations.”—showed that the 74% of individuals belonging to some of the lower educational levels responded “1—never” to this question, while only 40% of parents with higher education responded “1—never”, and 31% of them stated that they “2—rarely” follow this practice in their daily lives ($p < 0.004$).

In Question 14—“When searching online for health information relevant to my child, I am particularly interested in possible causes for the illness”—individuals with a higher educational level (tertiary/university education or master’s/PhD degree) were more commonly interested in the identification of the possible causes of the illness during their online searches (92.7%), in contrast to individuals with a lower educational level, of whom only 60% exhibited this behavior (Pearson correlation, $p < 0.001$). The results of the remaining questions did not withstand the strict Bonferroni Correction ($p < 0.0023$).

4. Discussion

In the last couple of decades, the issue of parental online health information-seeking behavior has gained significant importance, while the generative AI era has added another level of complexity. This is evident from the increasing number of studies being conducted internationally. There is a lack of reliable and valid tools in Greece for assessing this specific practice and, consequently, limited knowledge regarding this type of parent behavior. Factors such as the level of health literacy, the prevalence of internet use, trust in web sources, social and familial influences, and cultural sensitivity to health issues remain unknown and warrant consideration when examining this phenomenon. Our study represents a significant step forward in understanding parental online health information-seeking behavior (e-HISB) in Greece, through the adaptation and validation of the CHIRPI questionnaire into the Greek language.

Online health information-seeking behavior (e-HISB) became increasingly prevalent and notably intensified during the COVID-19 pandemic. This practice may potentially empower individuals' understanding of their health issues, thereby facilitating the better control of their health conditions. However, the overwhelming volume of available online health information may exacerbate feelings of fear and anxiety. Such feelings may prompt individuals to overuse medical services in search of reassurance, which, paradoxically, may heighten health-related anxiety and lead to a more negative self-assessment of their overall health [22].

Likewise, a significant number of parents utilize the internet to seek information regarding their children's health, often leveraging this knowledge to make informed decisions. However, this search behavior may sometimes escalate into a phenomenon resembling self-directed cyberchondria [17]. On the other hand, in the era of artificial intelligence (AI), an increasing number of individuals seek health-related information by interacting with AI-based tools. A recent study based on survey data showed that ease of use, accuracy, relevance, completeness, timesaving, clarity, cost-effectiveness, and emotional coverage were significant predictors of satisfaction following conversational AI use [23]. This highlights the necessity for more comprehensive research in the field of online health information-seeking.

Despite the growing international interest in electronic health information-seeking behavior (e-HISB), particularly among parents, there is a notable lack of evidence in Greece to date. To the best of our knowledge, our study is the first attempt to adapt and validate a standardized tool in the Greek language, facilitating the identification of patterns and trends in how parents utilize online resources for health information in Greece. The Greek version of the CHIRPI questionnaire addresses this critical gap by offering a psychometrically powerful tool that is culturally and linguistically adapted for Greek-speaking populations. While no prior standardized tools or large-scale studies have been conducted in Greece in this domain, employing the CHIRPI Greek version sufficiently fulfills the relevant purpose. It enables a deeper understanding of how Greek parents interact with digital health information and is expected to support more comprehensive research in the field of online health information-seeking. While many studies have offered descriptive insights, developments in this area are still emerging [8].

In general, the issue of parental health information-seeking behavior on the internet appears to be gaining significant attention within the international scientific community. This is evidenced by the growing number of studies conducted abroad on this topic. As evidenced by the literature review conducted in the present study, there is consistency with the findings obtained from the pilot application of the tool, which was implemented as part of this research. For example, a Spanish study found that the most frequent users of the internet to find health-related information were highly educated young women. Interestingly, no

significant differences were found in terms of income level, place of residence, or whether the family had children with chronic or serious illnesses [24]. Similarly, based on the limited available data regarding the Greek population, a cross-sectional study conducted in Alexandroupolis in 2021 focusing on the parents of pediatric surgical patients demonstrated that the internet is predominantly used by mothers to seek information concerning their children's health [14]. The Greek version of CHIRPI demonstrated strong psychometric properties, including high validity and internal consistency. Regarding psychometric properties, both versions have strong internal consistency, as indicated by Cronbach's alpha values above 0.89. Compared with the original German CHIRPI validation study, which reported an overall internal consistency of Cronbach's $\alpha = 0.89$ (Distress: 0.89; Symptom Focus: 0.87; Implementing Advice: 0.74), the Greek version demonstrated similar or even higher reliability scores (Distress: 0.97; Symptom Focus: 0.97; Implementing Advice: 0.91). This indicates that the factorial structure and internal coherence of the instrument were preserved in the Greek version, suggesting high cross-cultural equivalence. The test–retest reliability also aligns with the moderate to strong correlations found in the original study, reinforcing the scale's stability across languages and contexts. By generating reliable and comparable data, this tool not only supports local research but also integrates Greek data into the broader international dialog on eHealth behaviors, fostering cross-cultural analysis, benchmarking, and evidence-based policymaking.

Our study has several limitations. Firstly, the cross-sectional design and the use of self-administered questionnaires limit the ability to monitor participant honesty or emotional state during completion. As a result, the accuracy of self-reported data may be affected. Secondly, the sample consisted of parents whose children were hospitalized in a single pediatric department in a university hospital in Greece, which may limit the generalizability of the findings to the broader population of Greek parents or those in other healthcare settings. The use of a non-random, convenience sampling approach may also introduce selection bias. In addition, the low participation rate of fathers is a noteworthy limitation, as mothers comprised the majority of respondents. One significant limitation of our study is that the validity assessment focused only on internal consistency and test–retest reliability. We did not conduct convergent validity analyses with related instruments, such as the eHEALS or CSS. This oversight represents a limitation in establishing the construct validity of CHIRPI. Finally, this study did not conduct structural validity analysis (e.g., exploratory factor analysis) or sensitivity testing and relied exclusively on self-reported data, which may be subject to bias.

Future studies should aim to explore parental online health-seeking behaviors in non-hospitalized contexts, where health-related anxiety might be lower and decision-making dynamics may differ significantly. In this way, although the CHIRPI Greek version demonstrated strong psychometric properties in terms of internal consistency and test–retest reliability, further validation is needed in diverse populations, including those from different geographic regions, genders, age ranges, socioeconomic backgrounds, and educational levels. Although our findings are promising, the absence of factor analysis and sensitivity testing warrants careful interpretation. Further validation in larger and more diverse samples is essential.

5. Conclusions

In conclusion, we developed a valid and reliable Greek-language version of the Children's Health Internet Research, Parental Inventory (CHIRPI) tool. As the first standardized instrument in Greek designed to assess excessive parental online health information-seeking regarding children's health, CHIRPI addresses a significant gap in eHealth assessment within the Greek-speaking population. Its strong psychometric properties confirm its

suitability for use in research contexts. This tool will serve as a foundation for future research in parental digital health literacy, assist health professionals in understanding culturally specific patterns of information-seeking behaviors, and guide policymakers in designing targeted interventions. Moreover, its availability paves the way for cross-cultural comparisons and benchmarking with international data on eHealth behaviors, ultimately contributing to the development of effective and responsible digital health strategies in pediatric care.

Supplementary Materials: The Greek translation of CHIRPI is available online free of charge as the CHIRPI Greek version at <https://elocus.lib.uoc.gr/dlib/a/6/c/metadata-dlib-1682596458-173188-14367.tkl> (accessed on 26 June 2025).

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Institutional Review Board Statement: This study was approved by the Research Ethics Committee of the University Hospital of Heraklion (Reg. No. 23967 EI 2022/07-11-2022), and all procedures were conducted in accordance with the Declaration of Helsinki of 1975. Electronically informed consent was obtained from every participant. The participants were fully informed of the research process and could withdraw from this study at any time. All data were treated as confidential, and only designated members of the researcher team had access to them.

Informed Consent Statement: Informed consent was obtained from all subjects involved in this study.

Data Availability Statement: The data that support the findings of this study are not publicly available due to ethical or privacy restrictions. Interested parties may contact the corresponding author for further information, subject to institutional approvals.

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Conflicts of Interest: The authors declare that they have no conflicts of interest.

Abbreviations

The following abbreviations are used in this manuscript:

e-HISB	Electronic health information-seeking behavior
HRI	Health-related information
CHIRPI	Children's Health Internet Research, Parental Inventory
ΔΑΙΠΥΓΚ	Διαδικτυακή Αναζήτηση Παιδικής Υγείας, Γονική Καταγραφή

Appendix A

Presentation of the various stages involved in the translation process of the CHIPRI questionnaire.

S2 CHIRPI English – ΔΑΠΝΥΚ Ελληνικά

ΠΡΩΤΟΤΥΠΟ Official	1 st Forward Translation	2 nd Forward Translation	Τελική Μετάφραση Final Greek Translation	Backward Translation
Children's Health Internet Research, Parental Inventory	Αναζήτηση στο Διαδίκτυο σχετικά με την Παιδική Υγεία, Ερωτηματολόγιο για Γονείς	Διαδικτυακή Έρευνα Παιδικής Υγείας, Γονική Εμπλοκή	Διαδικτυακή Αναζήτηση Παιδικής Υγείας, Γονική Καταγραφή	Child Health Online Search, Parental Registry
The following questions concern your online searches for health information relevant to your child or children. Please mark the answer that best describes your searches. If none of the answers reflects your view exactly, please choose the closest answer. If you have more than one child, please think of all your children between the ages of 0 – 10.	Οι παρακάτω ερωτήσεις αφορούν τις διαδικτυακές σας αναζητήσεις πληροφοριών για θέματα υγείας σχετικά με το παιδί ή τα παιδιά σας. Παρακαλούμε σημειώστε την απάντηση που περιγράφει καλύτερα τις αναζητήσεις σας. Αν καμία από τις απαντήσεις δεν αντικατοπτρίζει ακριβώς την άποψή σας, παρακαλούμε επιλέξτε την πιο κοντινή απάντηση. Αν έχετε πάνω από ένα παιδί, παρακαλούμε	Οι παρακάτω ερωτήσεις αφορούν τις διαδικτυακές σας αναζητήσεις για πληροφορίες υγείας σχετικές με το παιδί ή τα παιδιά σας. Παρακαλώ σημειώστε την απάντηση που περιγράφει καλύτερα την αναζήτηση σας. Εάν καμία από τις απαντήσεις δεν απεικονίζει την άποψή σας ακριβώς, παρακαλώ επιλέξτε την πλησιέστερη απάντηση. Εάν έχετε παραπάνω από ένα παιδί, παρακαλώ	Οι ακόλουθες ερωτήσεις αφορούν τις διαδικτυακές σας αναζητήσεις για πληροφορίες υγείας σχετικές με το παιδί ή τα παιδιά σας. Παρακαλώ να σημειώσετε την απάντηση που περιγράφει καλύτερα τις αναζητήσεις σας. Εάν καμία από τις απαντήσεις δεν αντικατοπτρίζει με ακρίβεια την άποψή σας, παρακαλώ επιλέξτε την πλησιέστερη απάντηση. Εάν έχετε περισσότερα από ένα παιδιά, παρακαλώ	The following questions are about your online searches for health information related to your child or children. Please tick the answer that best describes your searches. If none of the answers accurately reflect your point of view, please choose the closest answer. If you have more than one child, please consider all your children between the ages of 0 and 10.

	σκεπτείτε όλα σας τα παιδιά ηλικίας από 0-10.	σκεπτείτε για όλα τα παιδιά σας ηλικίας 0-10.	σκεπτείτε όλα τα παιδιά σας μεταξύ 0 και 10 ετών.	
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1	When I notice any change in my child's body, I search for information about it on the Internet.	Όταν παρατηρώ οποιαδήποτε αλλαγή στο σώμα του παιδιού μου, αναζητώ πληροφορίες σχετικά με αυτό στο διαδίκτυο.	Όταν παρατηρώ κάποια αλλαγή στο σώμα του παιδιού μου, ψάχνω πληροφορίες για αυτό στο διαδίκτυο.	Όταν παρατηρώ οποιαδήποτε αλλαγή στο σώμα του παιδιού μου, αναζητώ πληροφορίες γ' αυτό στο διαδίκτυο.	Whenever I notice a change in my child's body, I look for relevant information about it on the internet.
2	When I search online for health information relevant to my child, I am particularly interested in whether the problems or symptoms need treatment.	Όταν αναζητώ στο διαδίκτυο πληροφορίες για θέματα υγείας σχετικά με το παιδί μου, με ενδιαφέρει κυρίως το αν τα προβλήματα ή συμπτώματα χρειάζονται θεραπεία.	Όταν αναζητώ διαδικτυακά πληροφορίες υγείας σχετικές με το παιδί μου, με ενδιαφέρει ιδιαίτερα αν τα προβλήματα ή τα συμπτώματα χρειάζονται θεραπεία.	Όταν αναζητώ στο διαδίκτυο πληροφορίες υγείας σχετικές με το παιδί μου, ενδιαφέρομαι κυρίως εάν τα προβλήματα ή τα συμπτώματα απαιτούν θεραπεία.	When I look online for health information related to my child, I am primarily interested in whether the problems or symptoms require treatment.
3	After I have searched online for health information, I have prescribed certain activities to	Αφού αναζητήσω στο διαδίκτυο πληροφορίες για θέματα υγείας, συνταγογραφώ συγκεκριμένες δραστηριότητες στο παιδί	Αφότου αναζητήσα διαδικτυακά πληροφορίες υγείας, έχω καθορίσει συγκεκριμένες δραστηριότητες	Αφότου έχω αναζητήσει πληροφορίες υγείας στο διαδίκτυο, ορίω συγκεκριμένες δραστηριότητες	After I have searched for information online, I give specific activities to my child (eg muscle strengthening exercises).

	my child (e.g. exercise for muscle strengthening).	μου(π.χ. άσκηση για μυϊκή ενδυνάμωση).	στο παιδί μου(π.χ. άσκηση για μυϊκή ενδυνάμωση)	στο παιδί μου (π.χ. ασκήσεις για μυϊκή ενδυνάμωση).	
4	I find it hard to relax after searching online for health information concerning my child.	Μου είναι δύσκολο να χαλαρώσω αφού έχω αναζητήσει στο διαδίκτυο πληροφορίες για θέματα υγείας που αφορούν το παιδί μου.	Δυσκολεύομαι να ηρεμήσω αφότου έχω αναζητήσει διαδικτυακά πληροφορίες υγείας που αφορούν το παιδί μου.	Δυσκολεύομαι να ηρεμήσω αφότου αναζητήσω πληροφορίες υγείας στο διαδίκτυο σχετικά με το παιδί μου.	I find it hard to calm down after looking up health information online about my child.
5	After I have searched online for health information, I ask teachers or nursery staff for help in implementing some of the recommendations.	Αφού αναζητήσω στο διαδίκτυο πληροφορίες για θέματα υγείας, ζητώ βοήθεια από τους δασκάλους ή το προσωπικό του βρεφικού σταθμού για την εφαρμογή κάποιων συστάσεων.	Αφότου έχω αναζητήσει διαδικτυακά πληροφορίες υγείας, ζητώ από τους δασκάλους ή τους βρεφονηπιοκόμους βοήθεια στην εφαρμογή μέρους των συστάσεων.	Αφότου έχω αναζητήσει θέματα υγείας στο διαδίκτυο, ζητώ από τους δασκάλους ή τους βρεφονηπιοκόμους βοήθεια στην εφαρμογή κάποιων συστάσεων.	After researching health topics online, I ask teachers or childcare workers for help implementing some recommendations.
6	Based on my online searches for health information relevant to my child's symptoms, I suspect he or she has a particular disease.	Με βάση τις διαδικτυακές μου αναζητήσεις πληροφοριών για θέματα υγείας σχετικά με τα συμπτώματα του παιδιού μου, υποπτεύομαι ότι ο γιός ή η κόρη μου έχει μια συγκεκριμένη ασθένεια.	Βασισμένη στις διαδικτυακές μου έρευνες για πληροφορίες υγείας σχετικές με τα συμπτώματα του παιδιού μου, υποψιάζομαι ότι αυτός ή αυτή έχει μια συγκεκριμένη ασθένεια.	Με βάση τις διαδικτυακές μου αναζητήσεις για πληροφορίες υγείας σχετικές με τα συμπτώματα του παιδιού μου, υποπτεύομαι ότι αυτός/αυτή έχει μια συγκεκριμένη ασθένεια.	Based on my online searches for health information related to my child's symptoms, I suspect that he/she has a certain illness.
7	I panic when I read online that one of my child's	Πανικοβάλλομαι όταν διαβάζω στο διαδίκτυο ότι ένα από τα συμπτώματα του παιδιού μου	Πανικοβάλλομαι όταν διαβάζω διαδικτυακά ότι ένα από τα συμπτώματα του παιδιού μου	Πανικοβάλλομαι όταν διαβάζω στο διαδίκτυο ότι κάποια από τα συμπτώματα του παιδιού	I panic when I read online that some of my child's symptoms

	symptoms occurs in a rare or serious disease.	παρουσιάζεται σε σπάνια ή σοβαρή ασθένεια.	υφίσταται σε μια σπάνια ή σοβαρή ασθένεια.	μου εμφανίζεται σε μια σπάνια ή σοβαρή ασθένεια.	appear in a rare or serious disease.
8	When I find advice or recommendations during my online searches for health information (e.g. a particular diet), I apply them to my child.	Όταν βρίσκω συμβουλές ή συστάσεις κατά τις διαδικτυακές μου αναζητήσεις για θέματα υγείας (π.χ. μια συγκεκριμένη διατροφή), τις εφαρμόζω στο παιδί μου.	Όταν βρίσκω συμβουλές ή συστάσεις κατά τη διάρκεια των διαδικτυακών ερευνών μου για πληροφορίες υγείας (π.χ. μια συγκεκριμένη διατροφή), τις εφαρμόζω στο παιδί μου.	Όταν βρίσκω συμβουλές ή συστάσεις κατά τις διαδικτυακές μου αναζητήσεις για πληροφορίες υγείας (π.χ. μια συγκεκριμένη δίαιτα), τις εφαρμόζω στο παιδί μου.	When I find tips or recommendations in my online searches for health information (eg a certain diet), I apply them to my child.
9	After I have searched online for information about illnesses or symptoms that concern my child, I feel more anxious and distressed than before.	Αφού αναζητήσω στο διαδίκτυο πληροφορίες σχετικές με ασθένειες ή συμπτώματα που αφορούν το παιδί μου, αισθάνομαι περισσότερο ανήσυχος /η και αγχωμένος/η από πριν.	Αφότου έχω αναζητήσει διαδικτυακά για πληροφορίες σχετικές με ασθένειες ή συμπτώματα που αφορούν το παιδί μου, αισθάνομαι περισσότερο ανήσυχος και αγχωμένος από πριν.	Αφότου έχω αναζητήσει στο διαδίκτυο πληροφορίες σχετικά με ασθένειες ή συμπτώματα που αφορούν το παιδί μου, αισθάνομαι περισσότερο ανήσυχος και αγχωμένος από πριν.	After I have searched the internet for information about illnesses or symptoms involving my child, I feel more anxious and stressed than before.
10	When my child displays any symptom, I search on the Internet for information about it.	Όταν το παιδί μου παρουσιάζει οποιοδήποτε σύμπτωμα, αναζητώ στο διαδίκτυο πληροφορίες σχετικά με αυτό.	Όταν το παιδί μου εμφανίζει κάποιο σύμπτωμα, αναζητώ στο διαδίκτυο για πληροφορίες σχετικά με αυτό.	Όταν το παιδί μου εμφανίζει κάποιο σύμπτωμα, αναζητώ στο διαδίκτυο πληροφορίες σχετικά με αυτό.	When my child has a symptom, I look online for information about it.
11	After searching online for health	Αφού αναζητήσω στο διαδίκτυο πληροφορίες σχετικά με θέματα	Αφότου έχω αναζητήσει διαδικτυακά πληροφορίες	Αφότου αναζητήσω στο διαδίκτυο πληροφορίες υγείας,	After I search the Internet for health information, I ask

	information, I ask teachers or nursery staff for their help in observing my child's symptoms.	υγείας, ζητώ τη βοήθεια των δασκάλων ή του προσωπικού του βρεφικού σταθμού για την παρατήρηση των συμπτωμάτων του παιδιού μου.	υγείας, ζητάω βοήθεια από τους δασκάλους ή τους βρεφονηπιοκόμους για την βοήθεια τους στην παρακολούθηση των συμπτωμάτων του παιδιού μου.	ζητάω από τους δασκάλους ή τους βρεφονηπιοκόμους τη βοήθεια τους στην παρατήρηση των συμπτωμάτων του παιδιού μου.	teachers or childcare workers for their help in observing my child's symptoms.
12	I become angry and irritated more easily after reading about my child's symptoms or illnesses online.	Θυμώνω και εκνευρίζομαι ευκολότερα αφού διαβάσω στο διαδίκτυο σχετικά με τα συμπτώματα ή τις ασθένειες του παιδιού μου.	Θυμώνω και εκνευρίζομαι ευκολότερα μετά που έχω διαβάσει για τα συμπτώματα ή τις ασθένειες του παιδιού μου στο διαδίκτυο.	Θυμώνω κι εκνευρίζομαι πιο εύκολα αφότου διαβάσω για τα συμπτώματα ή τις ασθένειες του παιδιού μου στο διαδίκτυο.	I get angry and upset more easily after reading about my child's symptoms or illnesses online.
13	I suggest specific diagnostic investigations that I read about online to my child's doctor.	Προτείνω στο γιατρό του παιδιού μου συγκεκριμένες διαγνωστικές έρευνες για τις οποίες διάβασα στο διαδίκτυο.	Προτείνω συγκεκριμένες διαγνωστικές έρευνες για τις οποίες έχω διαβάσει στο διαδίκτυο στον ιατρό του παιδιού μου.	Προτείνω στο γιατρό του παιδιού μου συγκεκριμένες διαγνωστικές εξετάσεις τις οποίες διαβάσα στο διαδίκτυο.	I suggest to my child's doctor certain diagnostic tests that I read about on the Internet.
14	When searching online for health information relevant to my child, I am particularly interested in possible causes for the illness.	Όταν αναζητώ στο διαδίκτυο πληροφορίες για θέματα υγείας σχετικά με το παιδί μου, με ενδιαφέρουν ιδιαίτερα οι πιθανές αιτίες της ασθένειας.	Όταν αναζητώ πληροφορίες υγείας στο διαδίκτυο σχετικές με το παιδί μου, ενδιαφέρομαι εξαιρετικά για τις πιθανές αιτίες της ασθένειας.	Όταν αναζητώ στο διαδίκτυο πληροφορίες υγείας σχετικές με το παιδί μου, ενδιαφέρομαι κυρίως για τις πιθανές αιτίες της ασθένειας.	When I search the internet for health information related to my child, I am mainly interested in the possible causes of the illness.

15	I have difficulty falling asleep after searching online for information about illnesses or symptoms concerning my child.	Δυσκολεύομαι να κοιμηθώ αφού αναζητήσω στο διαδίκτυο πληροφορίες σχετικά με ασθένειες ή συμπτώματα που αφορούν το παιδί μου.	Δυσκολεύομαι να αποκοιμηθώ αφού έχω ερευνήσει διαδικτυακά για πληροφορίες σχετικές με αρρώστιες ή συμπτώματα που αφορούν το παιδί μου.	Δυσκολεύομαι να κοιμηθώ αφού αναζητήσω στο διαδίκτυο πληροφορίες για ασθένειες ή συμπτώματα που αφορούν το παιδί μου.	I have trouble sleeping after searching the Internet for information about illnesses or symptoms related to my child.
16	I ask my child's doctor to prescribe particular drugs that I have read about online.	Ζητώ από το γιατρό του παιδιού μου να συνταγογραφήσει συγκεκριμένα φάρμακα για τα οποία διάβασα στο διαδίκτυο.	Ζητώ από το γιατρό του παιδιού μου να συνταγογραφήσει συγκεκριμένα φάρμακα για τα οποία έχω διαβάσει στο διαδίκτυο.	Ζητώ από το γιατρό του παιδιού μου να συνταγογραφήσει συγκεκριμένα φάρμακα για τα οποία έχω διαβάσει στο διαδίκτυο.	I ask the doctor of my child to prescribe certain medications that I have read about online.
17	When searching online for health information relevant to my child, I am mainly interested in what illness the symptoms point to.	Όταν αναζητώ στο διαδίκτυο πληροφορίες για θέματα υγείας σχετικά με το παιδί μου, με ενδιαφέρει κυρίως ποια ασθένεια δείχνουν τα συμπτώματα.	Όταν αναζητάω διαδικτυακά πληροφορίες υγείας σχετικές με το παιδί μου, ενδιαφέρομαι κυρίως για το ποια ασθένεια καταδεικνύουν τα συμπτώματα.	Όταν αναζητώ στο διαδίκτυο για πληροφορίες υγείας σχετικές με το παιδί μου, ενδιαφέρομαι κυρίως για το ποια ασθένεια υποδεικνύουν τα συμπτώματα.	When I search the internet for health information related to my child, I am mainly interested in what illness the symptoms indicate.
18	Searching online for health information relevant to my child interferes with my everyday activities, such as chores, hobbies or time	Η αναζήτηση πληροφοριών στο διαδίκτυο για θέματα υγείας σχετικά με το παιδί μου επηρεάζει αρνητικά τις καθημερινές μου δραστηριότητες, όπως τις μικροδουλειές, τα χόμπι ή το	Η διαδικτυακή αναζήτηση πληροφοριών υγείας σχετικές με το παιδί μου παρεμβαίνει με τις καθημερινές μου δραστηριότητες, όπως τις δουλειές του σπιτιού, τα χόμπι ή το χρόνο που περνάω με την	Η διαδικτυακή αναζήτηση πληροφοριών υγείας που σχετίζονται με το παιδί μου παρεμβαίνει στις καθημερινές μου δραστηριότητες, όπως τις δουλειές του σπιτιού, χόμπι ή	Searching for health information related to my child online interferes with my daily activities, such as housework, hobbies, or time with family and friends.

	with family and friends.	χρόνο με την οικογένεια και τους φίλους.	οικογένεια και τους φίλους.	χρόνος με την οικογένεια και τους φίλους.	
19	When searching online for health information relevant to my child, I am hoping to find practical advice.	Όταν αναζητώ στο διαδίκτυο πληροφορίες για θέματα υγείας σχετικά με το παιδί μου, ελπίζω να βρω πρακτικές συμβουλές.	Όταν αναζητάω διαδικτυακά πληροφορίες υγείας σχετικές με το παιδί μου, ελπίζω να βρω πρακτικές συμβουλές.	Όταν αναζητώ στο διαδίκτυο πληροφορίες υγείας σχετικά με το παιδί μου, ελπίζω να βρω πρακτικές συμβουλές.	When I look online for health information related to my child, I hope to find practical advice.
20	If I see freely available medication recommended during my online search for health information, I will give that medication to my child.	Αν δω να συστήνονται ελεύθερα διαθέσιμα φάρμακα κατά τη διαδικτυακή μου αναζήτηση για πληροφορίες σε θέματα υγείας, θα δώσω αυτά τα φάρμακα στο παιδί μου.	Εάν δω φάρμακα διαθέσιμα να προτείνονται ελεύθερα κατά τη διάρκεια της διαδικτυακής μου αναζήτησης πληροφοριών υγείας, θα χορηγήσω αυτά τα φάρμακα στο παιδί μου.	Εάν δω να συνιστάται ελεύθερα διαθέσιμο φάρμακο κατά τη διάρκεια της διαδικτυακής μου αναζήτησης για πληροφορίες υγείας, θα δώσω αυτό το φάρμακο στο παιδί μου.	If I see an over-the-counter drug recommended during my online search for health information, I will give that drug to my child.
21	I find it difficult to stop worrying about my child's health after searching online for information about illnesses or symptoms concerning.	Μου είναι δύσκολο να σταματήσω να ανησυχώ σχετικά με την υγεία του παιδιού μου αφού αναζητήσω πληροφορίες στο διαδίκτυο σχετικά με ασθένειες ή τα συμπτώματά τους.	Δυσκολεύομαι να σταματήσω να ανησυχώ για την υγεία του παιδιού μου αφού αναζητήσω διαδικτυακά πληροφορίες για ασθένειες ή σχετικά συμπτώματα.	Δυσκολεύομαι να σταματήσω να ανησυχώ για την υγεία του παιδιού μου αφού αναζητήσω στο διαδίκτυο πληροφορίες σχετικά με ασθένειες ή συμπτώματα.	I find it difficult to stop worrying about my child's health after searching the internet for information about illnesses or symptoms.

Πρωτότυπο official	Never	Rarely	Sometimes	Often	Always
Forward Translation Greek	Ποτέ	Σπάνια	Μερικές φορές	Συχνά	Πάντα
Backward Translation	Never	Rarely	Sometimes	Often	Always

Subscales:	Υποκλίμακες:	Υποκλίμακες:	Υποκλίμακες:	Subscales:
Distress	Δυσφορία	Ενόχληση	Δυσφορία	Discomfort
Symptom Focus	Εστίαση στα συμπτώματα	Εστίαση στα συμπτώματα	Εστίαση στα συμπτώματα	Focus on symptoms
Implementing Advice	Εφαρμογή συμβουλών	Υπόδειξη συμβουλών	Εφαρμογή συμβουλών	Apply recommendations

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