

(2) Concerning children

① Questionnaire survey results (Figure 1)

a. CBCL/TRF

The Child Behavior Checklist (CBCL) 4 is a widely used evaluation scale for measuring problem behavior in children. Parents fill out the evaluation, which consists of 100 questions. The Teacher’s Report Form (hereafter referred to as TRF), is an evaluation scale that the nursery school teacher fills out using the same criteria as CBCL. These two evaluations are combined and then classified into “normal range,” “borderline range,” and “clinical range” in total scores and subscales.

In the FY 2017 survey, 6 parents (8.6%) scored in the “borderline range” and 4 (5.7%) in the “clinical range.” On the other hand, in terms of TRF scores, submitted by nursery school teachers, 15 (21.4%) scored in the “borderline range,” and 22 (31.4%) in the “clinical range.”

Further, the mean total CBCL score for parents in FY 2016 was 53.5 (8.58 = SD), compared to 52.0 (8.72 = SD) in FY 2017. The means that the total TRF score (reported by nursery school teachers) in FY 2016 was 61.3 (6.01 = SD), compared to 59.7(6.32 = SD) in FY 2017. These values were compared using t-tests, and while no significant difference was found between CBCL scores ($t(69) = 2.00, p = .05, p < 0.05$), a significant difference was found between TRF scores ($t(68) = 2.22, p = .03, p < 0.05$).

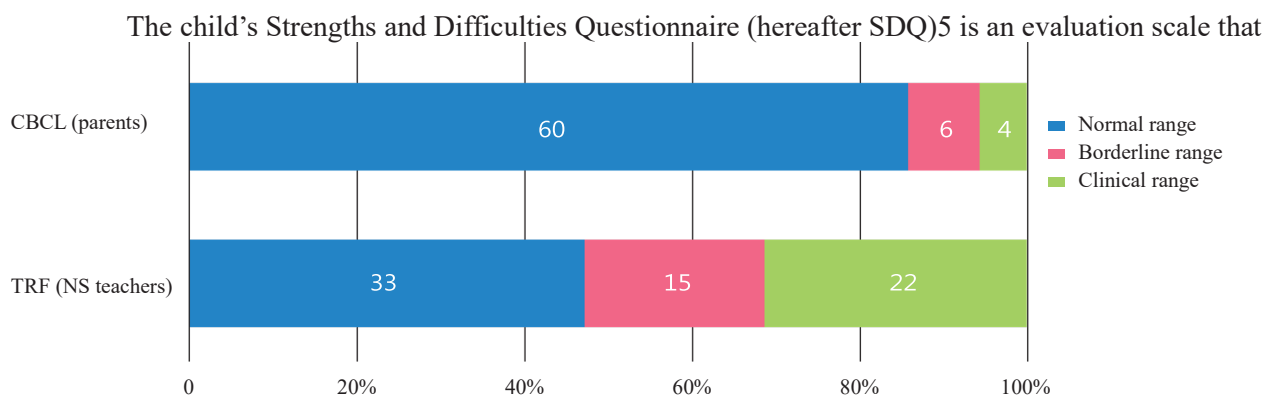


Figure 1: FY 2017 CBCL/TRF scores

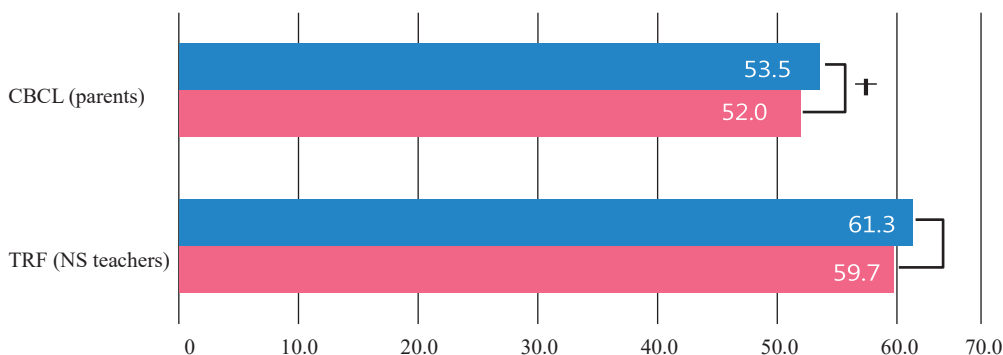


Figure 2: Comparison of CBCL & TRF scores in FY 2016 and FY 2017

screens children’s behavioral problems in much the same way as the CBCL. Scores for the 25-item questionnaire, which is answered by parents and caregivers, are categorized as “low need,” “some need,” or “high need” for combined total scores and subscales.

In the FY 2017 survey, 5 parents (7.1%) scored their children in the “some need” range, and 1 (1.4%) scored in the “high need” range. When scored by nursery school teachers, 4 children (5.7%) were in the “some need” range, and 3 (4.3%) were in the “high need” range.

Further, the mean parent SDQ score in FY 2016 was 7.39 (3.78 = SD), compared to 7.41 (3.99 = SD) in FY 2017. The mean nursery school teacher SDQ score in FY 2016 was 7.59 (5.47 = SD), compared to 7.41 (5.08 = SD) in FY 2017. These values were comparing using t-tests, and no significant differences were observed for parent-scored ($t(69) = 0.74, p = .94, p < 0.05$), and nursery school teacher-scored ($t(69) = 0.38, p = .71, p < 0.05$) SDQ values.

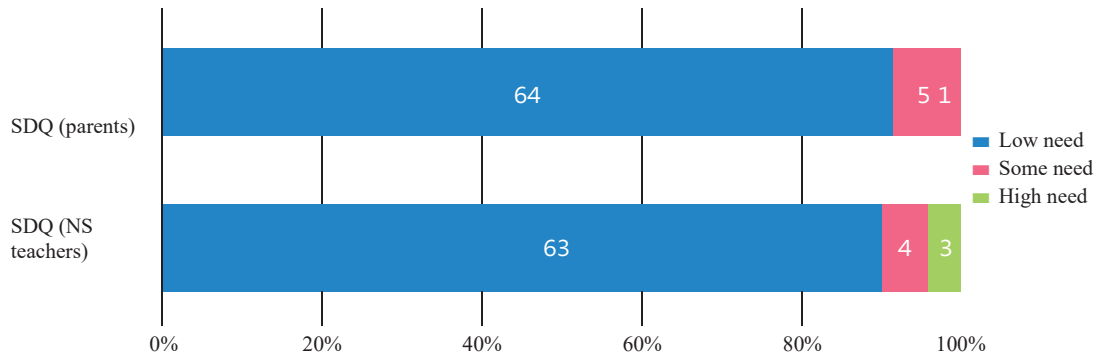


Figure 3: FY 2017 SDQ scores

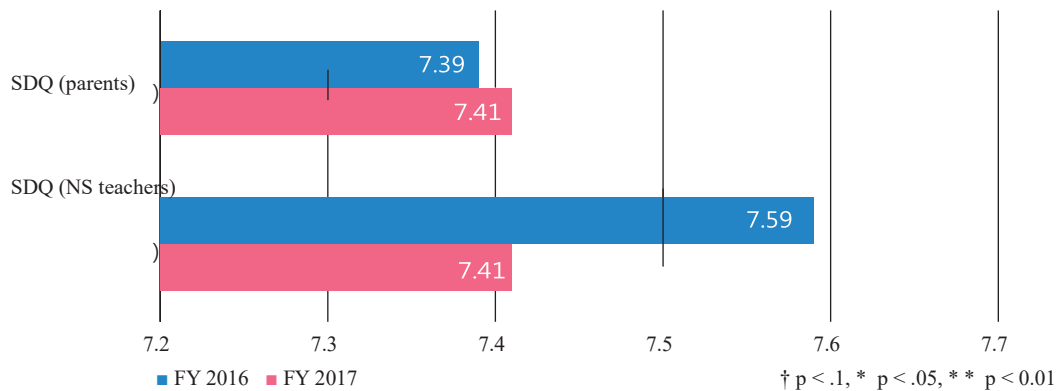


Figure 4: FY 2016 and FY 2017 SDQ Scores

② Results of cognitive development tests (Figure 5)

The Wechsler Intelligence Scale for Children, Fourth Edition⁸ (WISC-IV) is a test of cognitive function that can be administered to children between the ages of 5 years 0 months and 16 years 11 months. It comprises 15 subscales (10 basic tests, 5 supplementary tests) which yield 5 composite scores (1 full-scale IQ measurement and 5 index scores).

In this study, we attempted to administer the WISC-IV to all cases, but if, for some reason, we were unable to do so, we used Tanaka-Binet⁹ as a replacement test. Means for the various scores and indexes of the WISC-IV are as follows: full-scale IQ (FSIQ) = 95.93, Verbal Comprehension Index (VCI) = 97.54, Perceptual Reasoning Index (PRI) = 96.03, Working Memory Index (WMI) = 89.43, Processing Speed Index (PSI) = 97.85. We excluded the scores of the three children that took the Tanaka-Binet test due to high variability in their results.

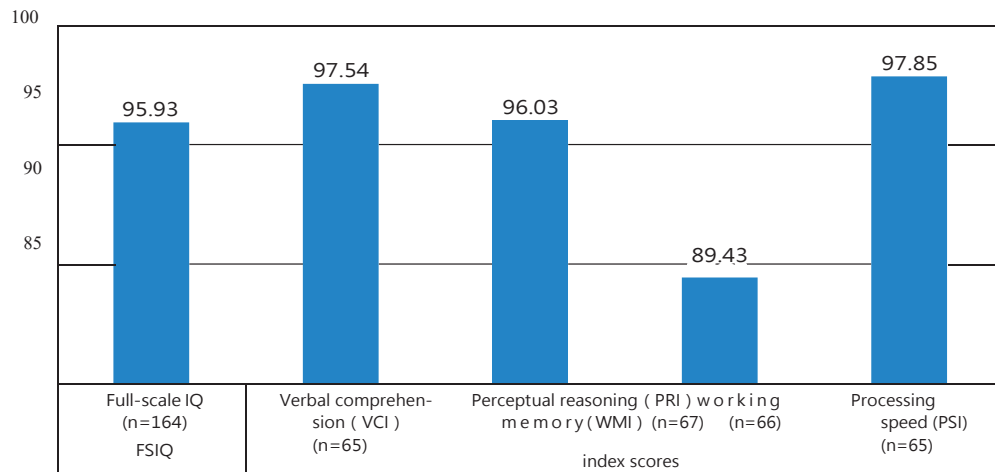


Figure 5. Cognitive Development Test Results

(3) Parent questionnaire results (Figures 6, 7)

Generally, mothers were asked to fill out questionnaires and attend survey interviews, but for three families, it was the fathers who participated instead. In FY 2017, we did not hold structured interviews, and instead used questionnaires.

The Kessler Psychological Distress Scale (K6)¹⁰ was developed as a tool for screening overall mental health, a simple scale consisting of six items, with the cutoff point for the total score being 13 points; scores are classified as belonging to the “healthy group” or the “clinical group.” The Beck Depression Inventory-Second Edition (BDI-II)¹¹ is a measure developed to screen for and evaluate the extent of depression; it consists of 21 questions, and total scores are classified as “very mild,” “mild,” “moderate,” or “severe,” with the cutoff for the first two ranges at 21 points, and the last two at 31 points. The Impact of Event Scale-Revised (IES-R)¹² is a measure for evaluating the symptoms associated with PTSD screening and trauma; the cutoff point for the total score is 23 points, and scores are classified as belonging to a “healthy group” and a “clinical group.”

As part of the FY 2017 study, we had the parents and guardians of each child complete the evaluations listed above. Twenty-four parents (34.8%) were in the K6 “clinical group;” 5 (7.2%) were in the BDI-II “moderate” range; 1 (1.4%) was in the “severe” range, and 4 (5.8%) were in the IES-R “clinical group.”

The means for each of these metrics in FY 2016 and FY 2017 were as follows, respectively: K6: 3.42 (3.15 = SD) and 3.43 (3.03 = SD); BDI- II: 10.7 (7.07 = SD) and 9.75 (6.90 = SD); IES-R: 11.0 (12.2 = SD) and 8.30 (10.6 = SD). Scores from both years for each metric were compared with one another using t-tests. Statistically significant differences were observed for the IES-R scores only ($t(68) = 2.95, p = .04, p < 0.05$), and not for the K6 ($t(68) = 0.04, p = .97, p < 0.05$) or the BDI- II ($t(68) = 1.27, p = .21, p < 0.05$) scores.

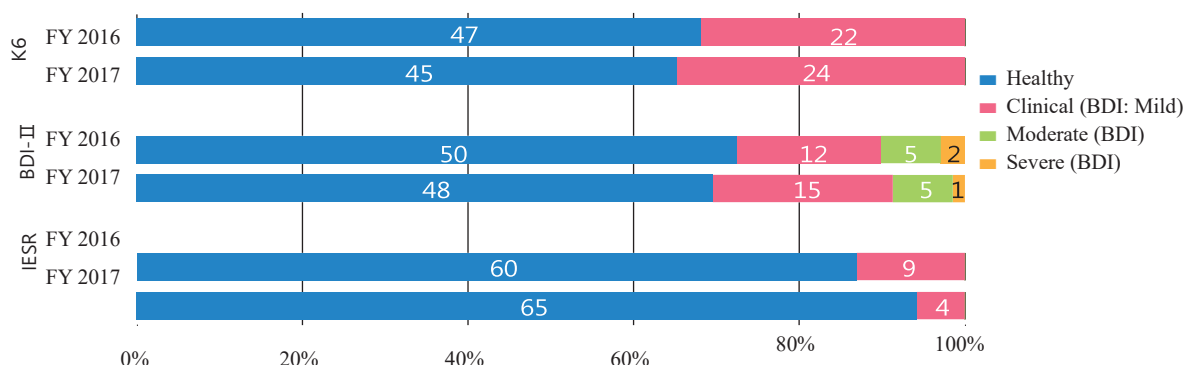


Figure 6. Parent Mental Health Questionnaire Results

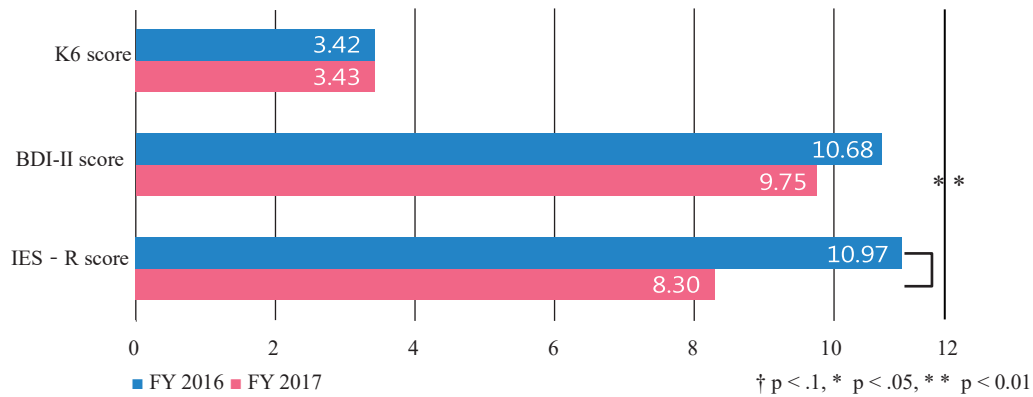


Figure 7. Comparison of FY 2016 and FY 2017 Scores for K6, BDI- II, and IES-R

(4) Flagging and follow-up for families needing support

Based on a comprehensive assessment of the survey, including the survey questionnaire results, and the results of the survey interview, the criteria (outlined below) were formulated for families that required support. The following four items were presented, and a family was flagged as requiring support if they met any one criterion.

- ① A WISC-IV FSIQ of 75 or lower for their child, or a significant bias or lopsidedness in their child’s five index scores
- ② A parent K6 or IES-R score in the “clinical range,” or a parent BDI- II score in the “moderate” range or higher

These criteria flagged 15 families as requiring support. We arranged individual counseling with child psychiatrists and case study conferences in nursery schools for these families. We also provided support to the parents of these families as needed, and we worked to connect them to counseling organizations. As a result, three children were referred to specialized medical institutions.

5. Discussion

The research results outlined above are a part of the “Study of Longitudinal Support for Children Born After the Disaster” project, which is being conducted in collaboration with the Iwate Child Care Center at Iwate Medical University and the Children’s Mental Health Support Project Promotion Office at Fukushima University. They contain results from Miyagi Prefecture only. We are in year two of the 12 years that this project is slated to run. After obtaining participation consent from 70 families in four municipalities in Miyagi Prefecture, we used holistic, comprehensive evaluations based on the results of questionnaires, and interviews conducted with the children and parents of these families, to determine criteria for flagging individuals requiring support; we then proceeded to provide immediate support to the individuals we had identified.

When evaluating the children, behavioral aspects were assessed using a questionnaire, and cognitive development was assessed based on psychological tests. For the CBCL/TRF and the SDQ, all behavioral measures, the percentage of “needs support” children were higher here than they were in the general population. This suggests that even though seven years have passed since the disaster, the children we targeted here still have behavioral issues, at least to some degree. When we compared the means of each of the two years that this study has been running, we only observed a statistically significant improvement for nursery teacher-reported TRF scores. Statistically, significant improvements were not observed for the other three metrics (parent-reported CBCL, parent-reported SDQ, and nursery teacher-reported SDQ). We cannot therefore conclude that child behavioral issues have improved over the last two years. In our evaluation of child cognitive development using the WISC-IV, results lower than the prescribed benchmark were only observed in the case of the Working Memory Index (WMI). Because our sample size is limited to 70 individuals, a rather small number, it is difficult for us to demonstrate statistical significance. Nevertheless, we must carefully monitor changes in the cognitive development of these children.

In our evaluations of parents, we only utilized questionnaire-based measurements of psychiatric symptoms. The percentage of parents flagged as “needs support” by their results on the K6, BDI- II and IES-R tests was higher than it was among the general population. Upon comparing the metrics and their respective means across the two years that this study has been running, a statistically significant improvement was observed only for IES-R scores. No significant changes were observed for other metrics. Based on these results, we see that even now, seven years later, parents who live in disaster-affected regions are burdened with mental health issues, clearly indicating a need for comprehensive support efforts that cater to parents as well as to children. The

improvements we have observed in IES-R scores, however, indicate that even in the absence of targeted support, trauma-related symptoms may simply improve with time.

This research effort has several limitations. First, because we were only able to achieve a household consent rate of 20%, the representativity of our sample size cannot be guaranteed. It is quite possible that those who consented to support were already aware of some level of anxiety and unease in their own lives or the lives of their children. Next, this study did not establish a control group of disaster-unaffected children. For this reason, we cannot determine whether or not the subjects studied herein are better or worse off than those living in regions that have not been affected by the disaster.

The results of this study thus far suggest that the life-arresting circumstances caused by post-disaster stress may have affected the development of children born under those conditions. In FY 2018 and beyond, we plan to conduct regular cross-sectional surveys to understand how the Great East Japan Earthquake affects both the current state of, and any prior, post-disaster changes in the mental health of children and parents in disaster-struck regions. We will also continue to provide comprehensive interventions to families flagged as needing support.

References

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