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Preliminary evidence for the reliability and validity of the Stirling children's well-being scale (SCWBS) with Japanese children

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ABSTRACT

Japanese children manifest social-emotional difficulties due to increased absenteeism and bullying incidents at schools. Mental health services using evidence-based practices within school systems aim to promote mental health and well-being; therefore, there is a need to develop a well-being assessment scale for Japanese children. This study examined the reliability and validity of a child well-being scale adapted from the Stirling Children's Well-being Scale (SCWBS) for Japanese children, namely the J-SCWBS. It was verified for Japanese contexts in accordance with the guidelines concerning cross-cultural adaptations of self-report measures. Participants consisted of primary school children, aged 6–12 years. The results confirmed the scale's reliability and validity and its efficacy in assessing children's well-being within Japanese contexts.

1. Introduction

While modern mental health education is largely deficit-based and problem-focused, there is a growing recognition of the need for understanding and promoting the positive side of mental health, such as positive subjective experiences, positive characteristics, and positive institutions (Seligman & Csikszentmihalyi, 2000). The confusion of mental health with mental illness necessitates a shift from a deficit-based understanding toward a focus on well-being as a positive measure of healthy functioning (McDowell et al., 2009; Springer & Hauser, 2006; Tennant et al., 2007).

Well-being can be viewed from two perspectives: hedonic well-being (immediate states of pleasure and happiness) and eudaimonic well-being (the actualization of human potential) (Ryan & Deci, 2001). The former pertains to subjective well-being (SWB), whereas the latter refers to psychological well-being (PWB) (Liddle & Carter, 2015). Previous research uncovered the relationships between well-being and resilience (Lindert et al., 2014), social support (Lai & Ma, 2016), educational attainment (Morozink et al., 2010), and medical conditions (Friedman & Ryff, 2012). Accordingly, promoting students' well-being through positive support requires that the individual and social aspects of quality life be addressed as well.

Research indicates that well-being is located on a separate dimension to mental illness rather than at the opposite end of a continuum (Keyes, 2002; McDowell et al., 2009). Therefore, there is an even greater need to break away from a purely deficit-based model and to embrace the inclusion of well-being in positive psychology. However, a lack of well-being measures persists, especially for children, since the available measures mostly focus on mental illness (Liddle & Carter, 2015). This resulted in the development of children's well-being measures, such as the Stirling Children's Well-being Scale (SCWBS) developed by Liddle and Carter (2015). The SCWBS is a positively worded self-report measure of children's well-being designed to assess both SWB and PWB. The validity and reliability of the SCWBS were effectively established with a large group of children, aged 8 to 15 years, in the United Kingdom.

Japanese children manifest social-emotional difficulties due to increased absenteeism and bullying incidents at schools (Ministry of Education, Culture, Sports, Science and Technology, 2019). The UNICEF Innocenti Report Card (Gromada et al., 2020) published the child well-being outcomes of 38 countries wherein Japanese children ranked 37th with regards to mental well-being. Mental health services that utilize evidence-based practices within school systems provide accessible care that promotes both mental health and well-being. However, instead of focusing on promoting child well-being, these services mostly employ cognitive-behavioral oriented school interventions that target mental

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health problems such as anxiety, depression, and aggression (Neil & Christensen, 2009). Changing this focus is essential since research evidence has emphasized the need for a more positive perspective of mental health support (Carta et al., 2015). To promote positive aspects of mental health and well-being in Japan, Japanese children's well-being should be thoroughly assessed through a validated measure, such as the SCWBS.

Currently, the existing psychological measures in Japan are predominantly designed to measure mental health problems, which has resulted in a lack of well-being measures designed to measure both SWB and PWB in children. This finding is alarming, given that Schipper et al. (1996) emphasized the importance of subjectively evaluated well-being through children's self-reporting. The SCWBS is a well-developed measure of both SWB and PWB with reasonable validity and reliability. However, the cultural appropriateness, validity, and reliability of the SCWBS with regards to Japanese children requires cross-cultural adaptation and validation.

1.1. Cross-cultural adaptation and validation of self-report measures

It is mandatory to cross-culturally adapt a self-report measure—for use in different societies—to achieve equivalent purposes between the original and target versions of the assessment. This is achieved through extensive translation, synthesis, back translation, expert committee review, and pretesting (Beaton et al., 2000). The scale's items must be culturally adapted to preserve its content validity at a conceptual level within the target population (Herdman et al., 1998).

During the validation of the original SCWBS, Liddle and Carter (2015) examined its internal consistency, construct validity, and external validity through the test-retest method. After the translation and adaptation process, the Japanese version of the Stirling Children's Well-being Scale (J-SCWBS) should coincide with the original version on critical points, including item-to-scale correlation, internal consistency, reliability, construct validity, and responsiveness (Beaton et al., 2000). Responsiveness refers to an instrument's ability to detect clinically significant changes, which is assessed by the presence of a floor or ceiling effect in the responses (Moons et al., 2004).

1.2. Testing reliability

Internal consistency and test-retest reliability, two major types of reliability indices, are used to assess the extent to which measures are free from measurement errors. Specifically, internal consistency represents the extent to which items on the same scale are correlated, whereas test-retest reliability represents the consistency of a test measured over time.

A reliable measure needs to demonstrate moderate-to-strong internal consistency to confirm that items on the same scale measure the same construct. Furthermore, it must exhibit reasonable test-retest reliability to indicate that the same person's scores do not differ when the test is administered more than twice. Therefore, the SCWBS' adaptation requires a moderate-to-strong internal consistency and reasonable test-retest reliability for Japanese children.

1.3. Testing validity

The validity of a measure is the extent to which it is well-founded and accurately measures what it is supposed to in a real-world setting. Important validity subtypes that need to be tested for the cross-cultural adoption of psychological measures include content, construct, and convergent validities (Lucas, 2018). Content validity refers to the extent to which a measure's items are reasonably representative of the entire domain that a test seeks to measure. Therefore, it offers evidence of a measure's validity by assessing the degree to which the measure accurately represents the targeted construct (Almanasreh et al., 2019). Furthermore, the measure should not include any content that is not theoretically relevant (Lucas, 2018). To determine the content validity of J-SCWBS with Japanese children, an examination of whether or not the SCWBS appropriately measures the SWB and PWB of these children—conducted by independent experts on Japanese children's well-being—is required. The original version, SCWBS, assessed children's feedback to ensure that its items were suitable and relevant to their well-being.

Construct validity determines how well a test measures what it is supposed to measure. Therefore, it ensures that a test is constructed correctly such that it successfully measures what it is designed to measure. The current view of construct validity is comprehensive and includes all sources of evidence that support specific interpretations of scores as well as actions based on responding performances (Strauss & Smith 2009). The construct validity of a measure is tested by comparing it with other tests that measure similar qualities to see how positively correlated the two measures are.

Japanese researchers have shown that children's well-being is related to their emotional well-being and social support. Japanese students tend to experience strong feelings of powerlessness and struggle in their interpersonal relationships (Houri et al., 2012). Other Japanese studies have reported similar problems among students, including an emotional vulnerability in both primary and secondary schools (Ito & Sugiyama, 2014) as well as a lack of interpersonal relationships with family members and peers (Abe, 2011; Abe et al., 2014). Moreover, well-being assessments conducted with Japanese students must consider their unique context. Thereafter, the J-SCWBS' construct validity can be tested by comparing the correlation of its scores with those of other validated measures of social support and emotional vulnerability.

Convergent validity reflects the extent to which a measure correlates with other related measures. Testing convergent validity involves determining whether different measures of the same construct coincide, even when subjected to different methods of assessment. Accordingly, the convergent validity of the J-SCWBS must be tested by comparing its score with that of another measure of well-being.

2. Research object

This study aimed to examine the reliability and validity of the J-SCWBS—as developed in compliance with the Beaton guidelines (Beaton et al., 2000)—as it can be a useful measurement of well-being in Japanese primary schools. To test the convergent validity of the J-SCWBS, the researchers compared its scores with those of the WHO-Five Well-Being Index (WHO-5; Topp et al., 2015), which is a well-validated measure of SWB. A Japanese survey involving 10-year-old children demonstrated the WHO-5′s effectiveness at assessing Japanese students' emotional well-being (Ando et al., 2019).

With regards to evaluating the construct validity of the J-SCWBS, the researchers compared its scores with those of both the Social Support Scale for Children (SSSC; Matsumoto & Nishida, 2013) and the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997). These measures were chosen due to previous studies' findings that both social relationships as well as adaptive emotions and behaviors, have significant relationships with SWB (Diener et al., 2010). Furthermore, the SDQ Goodman (1997) has been validated in Japan (e.g., Moriwaki & Kamio, 2014), while the SSSC (Matsumoto & Nishida, 2013) exhibited good reliability and validity with Japanese primary school children (Yamamoto et al., 2017).

3. Materials and methods

3.1. Overview

This study aimed to develop the J-SCWBS and investigate its validity and reliability with a group of primary school students. All procedures were performed in accordance with the Declaration of

Helsinki (The World Medical Association, 2008) and the Beaton guidelines (2000). Ethical approval was obtained from the ethics committee of Tokushima Bunri University.

3.2. Participants

A total of 134 primary school students (69 females and 63 males; aged 6–12 years) from a school in western Japan participated in this study to evaluate the J-SCWBS in a Japanese educational context. All students belonged to regular classes in grades one to six. Six homeroom teachers (4 females and 2 males; aged 23–58 yeas) observed their classes and provided feedback about their students' completion.

3.3. Developing the J-SCWBS

The SCWBS is a measure of well-being designed by Liddle and Carter (2015). This scale consists of 15 items that are divided into two dimensions: the first, Positive Emotional State, consists of six items measuring SWB; the second, Positive Outlook, consists of six items measuring PWB; and the remaining three items indicate the existence of social desirability. Each item has five possible answers: 1 means never, 2 means rare, 3 means sometimes, 4 means often, and 5 means always. For this study, PowerVote, an electronic voting system, was utilized for recording participants' responses.

After obtaining approval from the Stirling Education Council for Japanese adaptation, the SCWBS' English-Japanese translation was conducted in accordance with the Guidelines for the Process of Cross-Cultural Adaptation of Self-Report Measures (Beaton et al., 2000). The SCBWS' English-Japanese translation involved forward translation, electronic synthesis of the forward translation, back translation, and evaluation by expert committees.

Two independent bilingual Japanese psychologists—with extensive experience in English-Japanese translations of printed documents—created two separate forward translation versions of the SCWBS. Synthesis of the final forward translation version was accomplished through an amalgamation of these two separate versions. All translation disagreements were resolved through direct discussions between the two independent bilingual Japanese psychologists. Similarly, two back translation versions were also created: one by an independent professional translation service and another by an independent bilingual Japanese psychologist with experience in English-Japanese translations. Finally, an expert committee reviewed, discussed, and reached a consensus regarding any discrepancies in the translations. Subsequently, they completed the questionnaire's final version and ensured reasonable semantic, idiomatic, experiential, and conceptual equivalence with the questionnaire items of the original measure. This expert committee was comprised of methodologists, health professionals, language professionals, as well as the translators involved in the process up until this point. The final version was tested with a pilot sample of 132 children to ensure that children understood the questionnaire items and could confidently produce responses.

3.4. Procedures

After the researchers described the project's purpose and method, the university's ethical board approved the study. Permission to distribute the questionnaires among the students—grade one to six—was obtained from the school principal and teachers at a primary school where the primary researcher of the study is employed as a teacher. Fortunately, this particular Japanese school had pre-existing parental consent that allows them to distribute questionnaires with the aim of assessing and promoting their children's well-being and learning. Therefore, the researchers were not explicitly obligated to seek individual parental consent to distribute their questionnaires for the project.

A researcher visited each classroom at a pre-arranged time during December 2020 to explain the study's purpose and confidentiality to the children. The children were informed that they may withdraw from the study at any time without penalties and that they could indicate if they did not want their responses to be used in the research. After obtaining their consent, the researcher distributed the questionnaires to the students in a hard copy format. The students completed their questionnaires during regular classroom hours under the supervision of the primary researcher. This researcher provided instructions for responding to each item and ensured that the children provided appropriate responses and understood the questions by answering all their queries and clarifying the meaning of any question. Additionally, the homeroom teachers observed their students and provided qualitative and quantitative feedback regarding any confusion or difficulties the students may have experienced while answering the questionnaires.

The questionnaires took between 10–15 min to complete with the first and second graders, whereas other graders took 20 min for the completion. One week later, the researcher visited the students again and asked them to complete only the J-SCWBS to evaluate the test-retest reliability of the J-SCWBS. After obtaining consent, the children completed the scale for the second time. After the researcher collected the completed questionnaires, the second and third researchers conducted the data analysis following the guidelines for cross-cultural adaptation as well as referencing the original version of the study on a computer. The completed questionnaires were stored in a locked cabinet to ensure data security.

3.5. Measurements

The original version, surveyed by Liddle and Carter (2015), was conducted using PowerVote, and it was examined for internal reliability, external reliability (test-retest reliability), and construct validity using the WHO-5 and the Dubois Self-esteem scale.

The validity of the choice to use paper-pencil self-administered questionnaires for the J-SCWBS was evaluated with other established measures of related constructs within a Japanese context, including four self-reporting measures: J-SCWBS, WHO-5 (Topp et al., 2015), SSSC (Matsumoto & Nishida, 2013), and SDQ (Goodman, 1997) for third to sixth grade students; and three measures—all but the SDQ—for first and second graders.

3.5.1. The WHO-five well-being index (WHO-5)

The WHO-5 is a 5-item questionnaire that provides an overall measure of an individuals' current mental well-being. It is known to exhibit adequate validity when screening for depression and measuring clinical trial outcomes. Item response theory analyses in studies of young and elderly persons have indicated that this measure exhibits good construct validity as a unidimensional scale of well-being in these populations (Topp et al., 2015). The present study utilized the Japanese version of the WHO-5 on a 4-point scale (0 = never, 1 = agree a little, 2 = agree, and 3 = agree with a lot) previously developed by Inagaki et al. (2013). Previous studies determined that the Japanese version of the WHO-5 adequately measures the well-being of Japanese primary school children with reasonable validity and reliability (Awata et al., 2007). The WHO-5 is a scale commonly used to scrutinize the convergent validity of the original SCWBS. Accordingly, it was included in this study to determine whether the SCWBS scores exhibit a positive relationship with the scores of an already validated measure of well-being as well as to specifically check the convergent validity of the J-SCWBS.

3.5.2. Social support scale for children (SSSC)

The SSSC was developed to assess young children's perceptions of social support. It requires students to nominate supporters for six different possible situations in their daily lives, including nobody, family, teachers, friends, and other people. These situations include being in trouble, doing something, feeling scared, feeling down, being unwilling, and being happy. Participants are allowed to make multiple selections for each

Table 1
Descriptive statistics and Cronbach's alpha of the J-SCWBS (n=126).

Grade (*n*)	*M*	*SD*	95.0% C.I. for EXP(B)		*Skewness*	*Kurtosis*	*Cronbach's α*
			Lower	Upper			
1 (25)	4.123	0.661	.692	.908	-0.338	-1.154	.818
2 (17)	3.490	0.539	.124	.803	0.607	-0.651	.534
3 (21)	3.881	0.918	.840	.958	-1.535	2.048	.910
4 (18)	3.722	1.065	.892	.974	-0.770	-0.367	.941
5 (22)	3.326	0.892	.839	.956	0.368	-1.092	.908
6 (23)	3.594	0.910	.895	.970	-0.232	-0.914	.939

situation. The items were scored by adding the number of selected options—excluding "nobody" since it is scored as "0." For example, an item is given a score of 2 if a child chose family and teachers as social support sources. The scale is known for exhibiting reasonable item-total correlations (r = .37–.58, n = 116, p < .0001; Matsumoto et al., 2016).

Previous studies determined that PWB is positively correlated with a child's level of social support (Poudel et al., 2020; Yoshizumi, 2016). Hence, the SSSC was included in this study to test the J-SCWBS' construct validity; specifically, whether the scores reveal a positive relationship with the scores of previously validated measures of social support.

3.5.3. The strengths and difficulties questionnaire (SDQ)

The SDQ is a 25-item questionnaire rated on a 3-point scale that screens the emotions and behaviors of children aged three to 16 years. This study utilized the SDQ's student self-report version (aged 11 to 17 years), on which Muris et al. (2004) conducted research with 439 students aged eight to 13 years, which suggested the usefulness of the scale in children as young as eight years old. Japanese research (Noda et al., 2013) revealed that the SDQ had good reliability and validity with 5072 students (aged 10 to 15 years). Thus, in this study, the third-to-sixth grade students (n = 84; aged nine to 12 years) completed the self-report version.

The SDQ consists of five subscales that each contain five items: emotional symptoms, conduct problems, inattention/hyperactivity, peer problems, and prosocial behaviors (PS). This study implemented the total difficulties (TD) sub-scale, which is calculated by the sum of all the sub-scale scores—except the PS. This sub-scale was chosen because the Office for National Statistics' (Beadsmore, 2015) survey on child well-being uses the TD score to provide regular and reliable estimates for measures of children's mental health. Therefore, the SDQ was included to test the construct validity of the J-SCWBS.

4. Results

The survey was administered to 134 students; however, since two students refused to participate in the study, only 132 students were included in the analysis. The sample for the analysis included 27 first graders, 19 second graders, 22 third graders, 19 fourth graders, 22 fifth graders, and 23 sixth graders. Table 1 presents the descriptive statistics for the available data (excluding six absentees), and the Cronbach' s alpha of the J-SCWBS.

4.1. Overview

The total scores for the J-SCWBS ranged between 17 and 60 among the whole student group (M = 44.45, SD = 10.49). The distribution was non-normally distributed, with a small negative skewness of -0.48 (SE = 0.22) and a small negative kurtosis of -0.52 (SE = 0.43) (see Fig. 1). The Jarque-Bera test revealed that that the distribution was not significantly different from a normal distribution, X^2 (2, n = 126) = 3.25, p = .17.

Regarding the social desirability sub-scale (three items: Items 2, 7, and 13): one respondent answered "3" on all three items, and 13 respondents answered "5" on all three items. These respondents accounted for

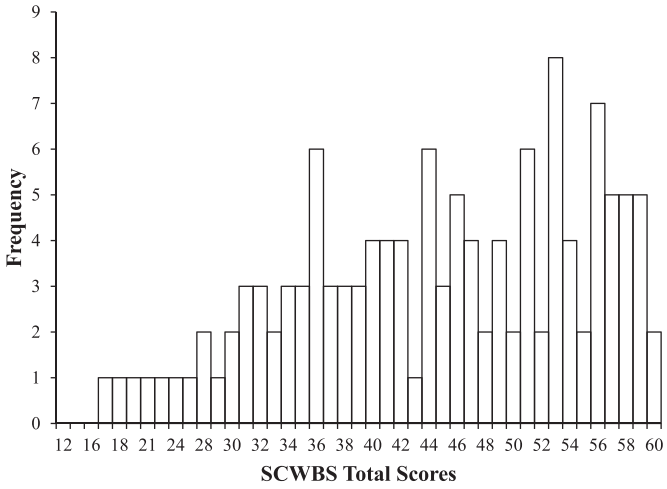

Fig. 1. Distribution of J-SCWBS except SD cores among all students|.
Note. J-SCWBS: Japanese version of Stirling Children's Well-being Scale; SD: Social desirability.

11% of all respondents. The original authors of the SCWBS, Liddle and Carter (2015), suggested that the scores of respondents who score 3 or 14-15 on the social desirability sub-scale be cautiously analyzed as these respondents may be answering the questions with a response set or giving socially desirable/undesirable answers. An individual examination of the response patterns of these respondents revealed that they did not have unusual response patterns on the SWB and PWB items on the J-SCWBS, WHO5, SDQ, and SSSC. Hence, the scores of these respondents were also included in the analysis.

The J-SCWBS' reliability and validity were investigated in accordance with the procedures of the original version. Since Borgers et al. (2000) indicated that different treatments are required for children under the age of seven than for those older than eight, the participants were divided into two groups for analysis: the first and second graders (n = 42: aged 6 to 8 years), and the third graders and above (n = 84: aged 8 to 12 years). The total scores of the first and second graders for the J-SCWBS ranged between 32 and 60 (M = 46.41, SD = 8.21). The distribution had a skewness of 0.12 (SE = 0.37) and kurtosis of -1.28 (SE = 0.72)(see Fig. 2). The Jarque-Bera Test revealed that that the distribution was not significantly different from a normal distribution, X^2 (2, n = 42) = 3.25, p = .19. The scores of the third graders and above for the J-SCWBS ranged between 17 and 60 (M = 43.48, SD = 11.38). The distribution had a skewness of -0.46 (SE = 0.26) and kurtosis of -0.78 (SE = 0.52)(see Fig. 3). The Jarque-Bera Test revealed that that the distribution was not significantly different from a normal distribution, X^2 (2, n= 84) = 5.28, p = .71. In the first group (first and second graders) ceiling effects were observed in nine items. However, in the second group (third grader and above) ceiling effects were seen in five items. No floor effects were observed in any of the groups.

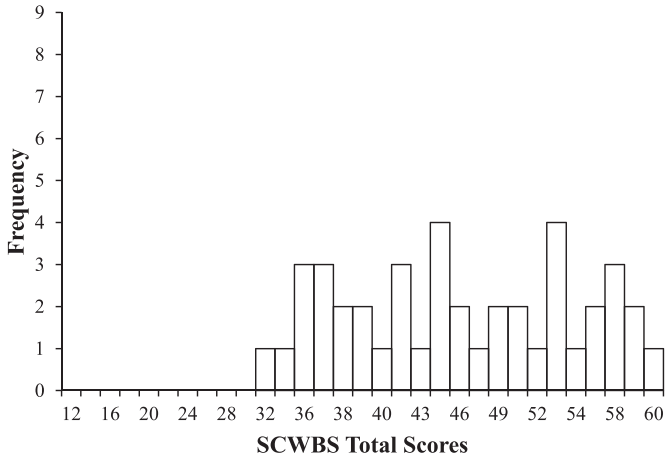

Fig. 2. Distribution of J-SCWBS except SD cores among first and second graders.
Note. J-SCWBS: Japanese version of Stirling Children's Well-being Scale; SD: Social desirability.

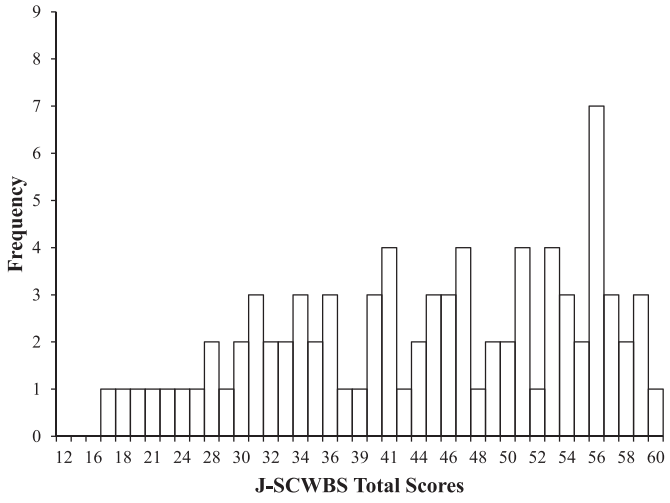

Fig. 3. Distribution of J-SCWBS except SD scores among third graders and above.
Note. J-SCWBS: Japanese version of Stirling Children's Well-being Scale; SD: Social desirability.

Table 2
Pearson correlations observed between the four scales of first and second-grade students (n= 42).

Scale	1	2	3
1. J-SCWBS[a]	1.000		
2. WHO-5[b]	0.709**	1.000	
3. SSSC[c]	0.277+	0.215	1.000

[a] J-SCWBS: the Japanese Stirling Children's Well-being Scale
[b] WHO-5: the WHO-Five Well-Being Index
[c] SSSC: Social Support for Children
**P< .01 *P< .05 +P<.10

4.2. Construct validity and convergent validity

A Pearson correlation was performed to assess the relationship between the scores of the J-SCWBS, WHO-5, SDQ, and SSSC. Table 2 reports the Pearson correlations between the three scales for the first and second graders. Table 3 reports the Pearson correlations between the four scales for the third graders and above. In grades 1 and 2,

Table 3
Pearson correlations observed between the four scales of third to sixth-grade students (n = 84).

Scale	1	2	3	4
1. J-SCWBS[a]	1.000			
2. WHO-5[b]	0.803**	1.000		
3. SSSC[c]	0.476**	0.404**	1.000	
4. SDQ total[d]	-0.494**	-0.353**	-0.272*	1.000

[a] J-SCWBS: the Japanese Stirling Children's Well-being Scale;
[b] WHO-5: the WHO-Five Well-Being Index
[c] SSSC: Social Support for Children
[d] SDQ-total: the Strengths and Difficulties Questionnaire**P< .01 *P< .05 +P<.10

the J-SCWBS had a significantly positive relationship with the WHO-5, $r(40) = .71$, $p < .01$, indicating that higher levels of SWB and PWB measured by the J-SCWBS predicts a higher level of SWB measured by the WHO-5. However, the J-SCWBS displayed a small positive relationship with SSSC, yet the relationship was not statistically significant, $r(40) = .22$, p = n.s, indicating that the level of SWB and PWB measured by the J-SCWBS was not significantly related to perceived social support measured by the SSSC.

For the third and higher grades, the J-SCWBS displayed a significantly positive relationship with the WHO-5, $r(82) = .80$, $p < .01$, indicating that higher levels of SWB and PWB measured by the J-SCWBS predict a higher level of SWB measured by the WHO-5. The J-SCWBS presented a significantly positive relationship with the SSSC, $r(82) = .48$, $p < .01$, indicating that higher levels of SWB and PWB measured by the J-SCWBS predict a higher level of perceived social support measured by the SSSC. The J-SCWBS displayed a significantly negative relationship with the SDQ(TD), $r(82) = -.48$, $p < .01$, indicating that higher levels of SWB and PWB measured by the J-SCWBS predict a lower level of emotional and behavioral difficulties as measured by the SDQ(TD).

These results support the convergent validity of the J-SCWBS with students in all grade levels and the construct validity of the J-SCWBS with third graders and above. However, the results did not support the construct validity of the J-SCWBS with the first and second graders.

4.3. Power analysis

A post-hoc power analysis using the G*Power 3 (Faul et al., 2007) revealed that the first and second grade group, with 42 participants, had a 16% probability of accurately detecting a small effect size ($r = 0.1$), 64% probability of accurately detecting a medium effect size ($r = 0.3$), and 98% probability of accurately detecting a large effect size ($r = 0.5$) with less than 5% error. The analysis also revealed that the third grader and above group, with 84 participants, had a 23% probability of accurately detecting a small effect size ($r = 0.1$), 89% probability of accurately detecting a medium effect size ($r = 0.3$), and over 99% probability of accurately detecting a large effect size ($r = 0.5$) with less than 5% error. These results indicate that the first and second grade group had an especially poor power to accurately detect small relationships due to the small sample size.

4.4. Internal reliability

In grades 1 and 2, the results indicated reasonable internal reliability (12 items; $\alpha = .86$). The third and higher grades also exhibited reasonable internal reliability (12 items; $\alpha = .93$). These results indicate that the items on the J-SCWBS adequately measured the same construct for both the first and second groups.

4.5. External reliability

The scale's external reliability was investigated by calculating the test-retest reliability coefficient. The overall score of the J-SCWBS for the first and second graders had moderate test-retest reliability ($r = 0.66$) over the week-long period. Two out of 12 items (items 8 and 14) had especially poor test-retest reliability ($r < 0.2$) over the one-week period. For the third and higher graders, the overall score had excellent test-retest reliability ($r = 0.86$) over the week-long period. One item (item 2: social desirability sub-scale) had poor test-retest reliability ($r < 0.2$) over the one-week period. These results suggest that the scale exhibits excellent reliability when used with third-to-sixth-grade students. Conversely, the scale's external reliability for first and second-grade students is regarded as poorer than older students'.

4.6. Teachers' feedback

The teachers rated how well their students understood the meaning of the J-SCWBS items on a 5-point Likert scale. The result revealed an overall mean score of 4.37 ($SD = 0.72$), ranging from 3.00 ($SD = 1.53$: item 13) to 5.00 ($SD = 0.00$: items 4, 8, 12, and 14). Item 13 belongs to the social desirability sub-scale, asking, "I always share my sweets." The teachers felt that the third to sixth grade students comprehended the scale well; however, for the first and second graders, it seemed difficult for them to choose one from among the five options due to puzzling differences between the points.

5. Discussion

Japanese primary school students participated in this study to validate a child well-being scale as the researchers sought an appropriate measurement of well-being to use in Japanese school settings. They developed a Japanese version of the SCWBS, namely the J-SCWBS, and assessed its validity and reliability in accordance with Beaton's guidelines (Beaton et al., 2000) and the original study (Liddle & Carter, 2015) concerning the cross-cultural adaptation of self-report measures.

5.1. Cross-cultural adaptation

The SCWBS was cross-culturally adapted to a Japanese context in accordance with generally used cross-cultural adaptation guidelines (Beaton et al., 2000). This study followed the guidelines, such as translation, back translation, and expert committee review, followed by examination of item-to scale correlation, internal and external consistency, construct validity, convergent validity, and responsiveness. The original SCWBS was used in the UK to measure the well-being of children and adolescents aged eight to 15 years, while the J-SCWBC was developed for primary school students aged six to 12 years.

The examination of the item-to score correlation revealed it to be adequate, ranging from .55 (item 8) to .87 (item 10). No content- or language-related issues were uncovered during the forward and back translations or the adaptation procedures. Hence, the research indicated that the J-SCWBS retained all items of the scale. During the J-SCWBS' administration to primary school children, the primary researcher—with assistance from the homeroom teachers—provided guidance to the first to sixth-grade students to ensure that clearly understood the different questionnaires.

Regarding the reliability and validity, differences appeared between the two groups: first to second graders and third to sixth graders. Concerning social desirability, which accounted for approximately 11% of the respondents in this study, the ratio seems to indicate a boosting of well-being measures. As to responsiveness, the study revealed ceiling effects in nine items for the first and second graders and four items in the other grades.

Additionally, according to the teachers' feedback, although there was no need to refine or redefine any items or words with regards to the Japanese adaptation, younger students will need teachers' support to understand some items, which can be addressed through monitoring the administration process.

Despite the concerns above, in accordance with Beaton guidelines and the study of the SCWBS, this study approves the use of the J-SCWBS in Japanese schools. Accordingly, no cross-cultural modifications were needed based on the results.

5.2. Reliability and validity of the J-SCWBS

The J-SCWBS' internal consistency was assessed to evaluate the degree of interrelatedness among its items. Its internal consistency proved to be excellent for 15-item adherence behavior. The internal consistency of the original English version was 0.85, and that of the Japanese version was 0.78. Since an α value of 0.70 to 0.95 was considered an acceptable value (Terwee et al., 2007), the J-SCWBS' internal consistency is comparably within an acceptable range of the English version's values.

However, Lucas (2018) argued that internal consistency coefficients are not adequate for assessing reliability because well-being measures tend to be moderately to strongly correlated. In response, this study examined the external reliability through the test-retest method over a one-week period, and the results revealed that the J-SCWBS exhibits good reliability for third to sixth graders ($\alpha = 0.86$). However, two of the items for the first and second graders indicated poor reliability ($\alpha < 0.20$), despite an overall reliability of 0.66. These results are consistent with the teachers' feedback suggesting that younger primary students need careful teacher supervision for the administration of the scale.

The current study validated the J-SCWBS with adequate convergent and construct validity. The study investigated correlations with the WHO-5 (SWB), SSSC (social support awareness), and SDQ's TD (emotional and behavioral problems); it found significant positive correlations with the WHO-5 and SSSC, but a significant negative correlation with the SDQ's TD in the older group. However, in the group of first and second graders who did not complete the SDQ, only a significant positive correlation was found between the J-SCWBS and the WHO-5. As the examination of reliability revealed that caution should be taken in administrating to younger students, the validity study indicated the difference between younger and older students' responses.

The post-hoc power analysis on correlation indicated weakness related to sample sizes as the younger group needs to increase power by increasing the number of participants. A future study with a larger number of younger students may show a more accurate understanding of the J-SCWBS with first and second-grade students.

5.3. Responsiveness

A ceiling effect is a measurement limitation that decreases the likelihood of a testing instrument accurately measuring an intended domain. However, a previous study indicated that ceiling effects were observed along an expected course, since healthy children exhibit more ceiling effects than children with chronic health conditions (Varni et al., 2007). In this study, the participants can be categorized as healthy children with no chronic health problems, which may explain the ceiling effect in this study.

5.4. Social desirability

The socially desirable response rate detected by the sub-scale in this study was 5.7 times higher than that in Liddle and Carter's study (2015). This can be explained by the social cultural tendency as well as the correlation with potential variables and the degree of similarity between manifest variables (Kawauchi, 2009).

Camerini and Schulz (2018) conducted research on social desirability and found that it significantly positively predicted subjective evaluations of family relationships and significantly negatively predicted self-

reported deviant behavior performed with peers. Because of the impact on the validity of self-reported well-being, they suggested that research on child indicators should include age-specific social desirability scales and control for the bias in statistical analyses.

On the other hand, Caputo (2017) argued that social desirability plays hardly any role in self-reported well-being measures since all well-being measures exhibit modest significant correlations with social desirability, accounting for approximately 3 to 6% of these measures' variance, after controlling for socio-demographic variables. That is, there is no need for a social desirability scale in self-reported well-being measures.

In our study, the findings cannot be used to conclusively indicate the necessity of the sub-scale or suggest the role. A future study should address how to interpret the sub-scale of the J-SCWBS.

5.5. Study strengths and limitations

This study's strengths include: (i) a methodological strength stemming from the fact that the method of cross-cultural adaptation fully relied on established guidelines; (ii) the scale's reliability and validity were established within a Japanese primary school context; therefore, demonstrating its reliability and validity in a heterogeneous group of participants, and (iii) the J-SCWBS can be used when stakeholders promote child well-being in the Japanese school context.

Conversely, major limitations include: (i) convenient sampling: the participants belonged to a local primary school where the primary researcher is working, so generalization of the validation of the scale requires sampling from wider areas in Japan; (ii) a small sample size: 124 in this study failed to produce adequate power for the robust validation of the scale particularly among 6–8 year old children; and (iii) the possibility of social desirability bias and no control methods for how to interpret the social desirability in well-being measurement. These limitations should be addressed in future studies.

6. Conclusion

The SCWBS has been cross-culturally adapted to accommodate a Japanese context. The J-SCWBS proved to be a reliable and valid instrument for measuring the well-being of Japanese primary school children. This study provided excellent reliability and adequate validity to support this Japanese version.

The study findings provide evidence of the efficacy of the J-SCWBS, particularly for 8–12 year old children, which can operate in research and educational policy that aims to promote children's well-being in Japanese society. To produce positive outcomes for well-being education, the J-SCWBS will facilitate practices or programs in Japanese schools. Further studies are recommended to address any limitations, including the use of the social desirability sub-scale of the J-SCWBS.

Declarations of Competing Interest

The authors declare that they have no conflicts of interest.

Credit authorship contribution statement

Chizuko Nishida: Conceptualization, Investigation, Writing original draft, Critical revision of the article, Final approval of the article; Yuma Ishimoto: Conceptualization, Methodology, Funding acquisition, Formal analysis, Writing review & editing, Final approval of the article; Yu Takizawa: Conceptualization, Methodology, Writing review & editing, Final approval of the article; Taiichi Katayama: Conceptualization, Final approval of the article; Yuki Matsumoto: Conceptualization, Methodology, Investigation, Funding acquisition, Writing original draft, Critical revision of the article, Final approval of the article

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