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Factor Structure and Psychometric Properties of the Stressor Scale in Inclusive Education in Nursery School Teachers of Children With Special Needs in Japan: The Relationship Between Assertiveness and Stress

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Due to increases in the number of children with special needs and the demands on nursery school teachers in Japan, the problem of staff burnout has been observed. In this study, we developed the Stressor Scale in Inclusive Education (SSIE) with nursery school teachers of children with special needs and clarified the relationship with childcare experiences of children with special needs. The results showed that nursery school teachers currently in charge of children with special needs or who had overseen children with special needs were significantly more likely to report experiencing stressors in the SSIE subscale "Human relations with parents and other children in the class" than those who had not overseen children with special needs. In addition, the Japanese version of the Rathus assertiveness schedule (J-RAS), developed by Rathus, was used to examine the relationship between assertiveness and stress in nursery school teachers and revealed a negative relationship between the SSIE subscale "Insufficient self-expertise" and J-RAS scores. Therefore, to reduce the stressors among nursery school teachers, nursery school teachers should have a sense of their expertise.

Keywords: Japanese childcare workers, children with special needs, stress, stressor scale, assertiveness

INTRODUCTION

Research on mental health, including stress and burnout, which are psychological burdens for nursery school teachers, has been conducted worldwide and indicates the possibility of serious psychological burdens for this group (Zhai et al., 2011; Unal, 2012; Clipa and Boghean, 2015; Sonmez and Kolasinli, 2021). In Japan, stress among nursery school teachers is serious (Ikeda and Okawa, 2012). Among other things, an increase in the number of children with special needs was reported to lead to burnout among nursery school teachers (Kiso, 2013).

In Japan, preschool facilities are divided into kindergartens, under the jurisdiction of the Ministry of Education, Culture, Sports, Science and Technology, to educate children from 3 years

old to before elementary school, and nursery schools, under the jurisdiction of the Ministry of Health, Labor and Welfare (MHLW) for children from 0 years old to before elementary school. Since 2006, the system of certified childcare centers, which integrates the functions and characteristics of kindergartens and nursery schools, has been in operation. In this study, we focused on nursery school teachers who work in nursery schools, which have the largest number of children among the preschool facilities. The average number of children per class is 18.2 in the infant class of 0–2-year-olds. There are also nursery school teachers for children aged 3–4 years, characterized by the large number of children and caregivers in the nursery (Masu et al., 2016). Nursery schools enroll children from infants to toddlers and provide nurturing care for infants and education in preparation for school. In Japan, starting in 2019, kindergartens, nursery schools, and accredited childcare centers offered free childcare for children aged 3 years and older, and in FY2020, 50.4% of children aged 1 and 2 years used childcare facilities (Ministry of Health, Family and Welfare, 2021). In addition, approximately 12,000 children are on waiting lists to use childcare facilities. Thus, the percentage of infants using childcare facilities is increasing annually, and the MHLW has launched the "Childcare Security Plan" and endeavoring to secure places for childcare (Ministry of Education, Culture, Sports, Science and Technology, 2020).

In addition, the number of children with special needs is increasing annually; according to a survey conducted in FY2018, the percentage of the number of childcare centers that reported having children with special needs was 83.2% (Ministry of Health, Family and Welfare, 2019). The term "children of concern" has been used in Japanese childcare since the 1980s and has been studied extensively (Nomura, 2018). Notably, children with developmental disabilities are not the only children that nursery school teachers are "concerned about" (Nomura, 2018). Against this backdrop, Japan newly established the Core Curriculum for Teaching in 2017, which clarifies the qualities and abilities that should be commonly acquired in teaching programs. The Core Curriculum for Teaching outlines the understanding and support for children who need special support, such as children with problems with their mother tongue, children from poor families, and children who have difficulties in learning and living, and clearly states the need for systematic support (Ministry of Education, Culture, Sports, Science and Technology, 2017). Since the 2000s, the existence of children with diverse backgrounds, such as abuse, poverty, being a sexual minority, food allergies, and single-parent families, has become apparent, and defining children with special needs is very difficult (Research on Childcare Issues, 2021).

Considering this situation in Japan, this study referred to the literature to classify children with special needs into the seven categories: (1) Children diagnosed as having disabilities, (2) Children without a diagnosis but having special developmental needs, (3) Children experiencing poverty, (4) Children with needs for support due to their family environment, (5) Children that were or are being abused, (6) Children requiring language support due to foreign nationality, and (7) Children requiring medical care.

In the literature, measures examining caregivers' stressors when caring for children with special needs have been used. The Opinions Relevant to the Integration of Students with Disabilities (ORI) (Jobe et al., 1996) is a measure of teachers' attitudes toward the full inclusion of children with disabilities in regular education. The scale Integration of Students with Disabilities (ORI) (Jobe et al., 1996) has been used in studies in the United States, Haiti, and Egypt (Dupoux et al., 2005; Emam and Mohamed, 2011). A second measure that investigates early childhood teachers' concerns about inclusive education is the Concerns About Inclusive Education Scale (CIES) (Sharma and Desai, 2002). Developed in India, the CIES has since been used in studies in several countries (Sharma et al., 2008; Oswald and Swart, 2011), and a revised version has been developed (Forlin et al., 2011). In Japan, Kiso (2016) investigated the stress of caregivers when caring for children with developmental disability tendencies. This study used multiple scales: the Child Behavior Characteristics Scale, the Parent Support Difficulties Scale, and the Cooperation with Others Scale. Thus, several scales have been developed to investigate teachers' stress and perceptions of inclusive education. However, accurately identifying concerns about inclusive education is difficult, and various research methods should be used to investigate these concerns (Park et al., 2018). In addition, most scales have been designed for the integration of children with disabilities into general classes. However, because the number of children with special needs is increasing in Japan, we posit it is important to identify the stressors of nursery school teachers when caring for children with special needs.

In addition, the shortage of nursery school teachers in Japan is serious. The early turnover of nursery school teachers and latent nursery school teachers who possess qualifications but do not want to work in childcare facilities has become a social problem (Kiso, 2018). Some of the key reasons for nursery school teachers leaving their jobs are reported to be problems with interpersonal relationships in the workplace (Bureau of Social Welfare and Public Health, and Tokyo Metropolitan Government, 2018). Therefore, in this study, we also focus on the relationship between assertiveness, a self-expression skill, and stressors. Assertiveness is a method of self-expression that was first mentioned in the United States in the 1970s (Hiraki, 2009). In Japan, assertiveness training has been practiced and studied mainly by nurses and other interpersonal professionals (Yoshinaga et al., 2018). Assertiveness refers to communicating appropriately while respecting the other person, rather than stating a viewpoint in a one-sided manner (Hiraki, 2009). According to Choi (2015), who conducted a study on South Korean kindergarten teachers, the retention of communication skills is negatively correlated with job stress (Choi, 2015). Additionally, in a study of special education teachers in Serbia, teachers with higher assertiveness levels reported less work-related burnout (Jovanovic et al., 2019). We used the Rathus Assertiveness Schedule (RAS), specifically the Japanese version (J-RAS) used in Japan (Suzuki et al., 2007). The score range of RAS is between -90 and +90, with the higher the score, the greater the level of assertiveness (Rathus, 1973).

Because nursery school teachers work with many individuals, including children, colleagues, and parents, they must adopt assertiveness in their communication. In addition, to improve the mental health of nursery school teachers, avoiding recognizing stressors as stress may be beneficial (Nishizaka, 2006).

Therefore, in this study, we propose two hypotheses: there is a relationship between assertiveness and stressors, and that the more assertive nursery school teachers are, the less likely they are to recognize stressors. We also create a stressor scale for nursery school teachers caring for children with special needs, examine the effect of experience in caring for children with special needs on the perception of stressors, and use J-RAS to examine the relationship between nursery school teachers' stressors and assertiveness.

MATERIALS AND METHODS

Preliminary Investigation

Objective

The purpose of this study is to prepare stressor items that nursery school teachers experience when caring for children with special needs and to develop the Stressor Scale in Inclusive Education (SSIE) in nursery school teachers of children with special needs for use in this study.

Method

Participants

This preliminary investigation was conducted with five participants: one nursery school director, one assistant director, and three university faculty members. One university faculty member specializes in childcare and two in special needs education.

Preparation of Items

To measure the stressors experienced by nursery school teachers when caring for children with special needs, we collected items that were stressors. To measure the stressors experienced by nursery school teachers when caring for children with special needs, we collected 78 items that were stressors. This stressor scale was designed with seven substructures: "managing children with special needs," "classroom management including children with special needs," "managing parents," "human relations," "classroom system," "qualifications of caregivers," and "job content." For the 78 stressor items, the participants were asked to examine the surface validity of the collected items by using the two-case method of ✓ or -, in line with previous studies (Shiratori and Kanno, 2012).

Results and Discussion

Questions that were marked with "– " by one or more participants were revisited or deleted. Of the 78 items, 39 items were marked with "-" by at least one of the participants. These 39 items were re-examined to see if there were any similar questions or if the expressions were appropriate, and 30 items that were judged to be inappropriate were deleted. Finally, a scale for the survey was created using 48 of the 78 items.

Main Survey

Objective

Based on examining the factor structure, reliability, and validity of the 48-item scale developed in the preliminary survey, the purpose of this study is to develop a scale for assessing the stressors of nursery school teachers in inclusive education. Further, we examine the effect of prior experience teaching children with special needs on the perception of stressors. In addition, J-RAS is used to identify the assertiveness scores of nursery school teachers, and the relationship between SSIE and J-RAS is examined.

Survey Method

Structure of the Questionnaire

Basic Attributes

The following categories were used: sex, age, years of experience as a childcare worker, position, class in charge, establishment of the workplace, and experience in caring for children with special needs. For the classification of years of experience, we referred to Uemura (2012), which clarified the relationship between stress and years of experience among nursery school teachers. We classified newcomers into three counties: 4 years or less, mid-career workers (5–19 years), and experienced workers ($\geq$20 years) (Uemura, 2012).

In addition, we selected seven aforementioned categories of children in need of special support (refer to Introduction). For each item, the respondents were asked to choose one of three responses: currently in charge, have experience in charge, and no experience.

Stressor Scale in Inclusive Education

The SSIE, a 48-item stressor scale for nursery school teachers when caring for children with special needs, developed through the preliminary survey reported above was used. Respondents were asked to indicate the degree to which they report experiencing report experiencing stress by using a 5-point scale from "not at all" to "very much."

Assertiveness Scale

The Japanese version of the Rathus assertiveness schedule developed by Rathus (1973), the Japanese version of the Rathus assertiveness schedule (J-RAS), was used. J-RAS was translated by Suzuki et al. (2004) and completed after review by several researchers including an American translator. J-RAS asks respondents to rate themselves on a six-point scale from "I don't agree at all" (–3 points) to "I agree exactly " (+3 points), with no zeroes. Seventeen of the 30 items are reversed items, and the higher the total score after processing the reversed items, the more assertive the respondent. After processing the reversed items, the higher the total score, the more assertive the respondent. Suzuki et al. (2004) studied nursing students and found that the total score of J-RAS ranged from –90 to + 90 (M = –12, SD = 20.2). Subsequently, the reliability and validity of J-RAS have been demonstrated in previous studies with nurses

(see Nakamura et al., 2017; Tomita et al., 2020). Although nurses and nursery school teachers have different national qualifications, they were chosen as the comparison participants for this study because they are professionals in interpersonal care and have in common the fact that they are mostly female.

Participants

Questionnaires were distributed to 316 nursery school teachers working in 18 licensed nurseries in 5 of Japan's 47 prefectures: 220 nursery school teachers (69.6% return rate) responded to the questionnaires, and 210 nursery school teachers were included in the analysis. Incomplete questionnaires (N = 10) were excluded due to missing data.

Procedures

We selected nursery schools that were related to the author or had cooperated with the study in the past, and asked their principals to cooperate by phone. For those nursery schools that were willing to cooperate, we asked the principal to fill out a consent form. The questionnaires were mailed to the nursery schools, and each nursery school was asked to return them together or individually. The survey was conducted from January to March 2020.

Analysis

Forty-eight tentative items were created to clarify the level of stress caregivers report experiencing when caring for children with special needs. The mean and standard deviation were calculated for each item. As a result, there were no items with significant bias, and factor analysis and the principal factor method were employed for all items (Nakamura, 2007). In order to determine the number of factors, the eigenvalues of the scree plot and the number of factors whose contribution ratio was 50–60% or more were adopted, and referring to Nakamura (2007), the principal factor method and Promax rotation were used, and factor loadings (0.45 or less) and items that showed strong factor loadings on two or more factors were deleted (Nakamura, 2007). After one-way analysis of variance, follow-up Tukey's multiple comparisons were conducted to explore the effects of participants' characteristics upon J-RAS total scores, and SSIE subscale scores. In order to clarify the relationship between the SSIE subscales and assertiveness scores, an analysis of covariance structure was conducted using the same sample. For goodness of fit, the closer the values of GFI, AGFI, and CFI are to 1, the better the fit of the data; for RMSEA, the fit is good if the value is less than 0.05, and the data is interpretable between 0.05 and 0.1 (Toyoda, 2007). Statistical analyses were performed using IBM SPSS v.27.0 and Amos v.26.0. (IBM, 2021).

Ethical Considerations

The content of the study was explained to the director of the cooperating preschool, and consent was obtained in writing. The nursery school teachers who were to be the participants of the survey were informed that their responses would constitute consent. This study was approved by the Ethics Committee of the university to which the author belongs (Tsukuba 2019-194A).

RESULTS

Participants' Basic Attributes, Japanese Version of the Rathus Assertiveness Schedule Scores, and Experience in Caring for Children With Special Needs

The participants' personal attributes and J-RAS scores are shown in **Table 1**. The childcare experience children with special needs is shown in **Table 2**.

The overall mean of J-RAS scores was -5.50 (SD = 16.13, range 46 to -58. The highest J-RAS scores were among nursery school teachers who worked as principals, deputy principals, and chiefs. By sex, male and female nursery school teachers had lower J-RAS scores, -10.75 and -5.50, respectively. In addition, J-RAS score increased with increasing years of experience. Regarding the personal attributes of the participants and J-RAS scores, the results of one-way analysis of variance and Tukey's multiple comparisons showed a significant difference ($p < 0.05$) between nursery school teachers working at the establishment's corporation and other childcare facilities working at religious and NPO corporations.

The next question was on the experience of teaching children with special needs. Regarding the classification of children with special needs, the largest number of nursery school teachers (43.6%) reported that they were currently teaching children without a diagnosis but with special developmental needs (mean 1.15, range 0–4).

Factor Analysis of Stressor Scale in Inclusive Education

The mean and standard deviation of each item of the SSIE were checked, and since there were no items with ceiling or floor effects, factor analysis was conducted for the SSIE using all items. The eigenvalues were set to 1 or higher, and the number of factors was set to 5, which was one level before the gradual change in the scree plot values (Nakamura, 2007). We extracted 21 items after excluding those showing a factor loading of less than 0.45 and a loading toward two or more factors (**Table 3**). The first factor was composed of eight items (33.68% of total variance) related to difficulty in managing children's behaviors, for example, their "difficulty in understanding instructions and inability to act without individual instructions" and "being restless and the inability to stay still." Therefore, we named this factor "difficulty in managing children." The second factor was composed of seven items (7.85% of total variance) related to difficulty in managing children's parents and individuals around the children, for example, "neglecting childcare," "not understanding the child's developmental delays and problem behaviors," and difficulties in explaining characteristics of a child with special needs to other children in the class. Therefore, we named this factor "human relations with parents and other children in the class." The third factor was composed of two items (7.17% of total variance) related to nursery school teachers' awareness of their insufficient teaching skills, which we named

TABLE 1 | Distribution of personal attributes and assertiveness scores.

				J-RAS total score		
			***N* (%)**	**Mean**	***SD***	***p***
Overall			210(100)	–5.50	16.13	
Gender	1	Male	12(5.7)	–10.75	14.16	
	2	Female	198(94.3)	–5.23	16.22	
Age	1	Under 29 years old	70(33.3)	–6.52	18.82	
	2	30–39 years old	56(26.7)	–7.53	16.25	
	3	40–49 years old	39(18.6)	–2.41	13.32	
	4	Over 50 years old	45(21.4)	–4.45	13.80	
Years of experience	1	Under 4 years old	52(24.8)	–7.66	17.88	
	2	5–19 years old	113(53.8)	–5.97	16.04	
	3	Over 20 years old	40(19.0)	–1.54	13.43	
	4	Other	5(2.4)	–11.40	7.50	
Post	1	Principal, Vice-Principal, Chief	20(9.5)	1.19	13.04	
	2	Class teacher	167(79.5)	–6.38	16.23	
	3	Other (Free teacher)	23(11.0)	–5.61	17.10	
Established	1	Municipality	47(22.4)	–5.60	15.28	3–4*
	2	Social Welfare Corporation	105(50.0)	–5.64	14.95	
	3	Corporation	44(21.0)	–3.66	19.35	
	4	Other (Religious corporations)	14(6.7)	–10.57	17.11	

*One-way ANOVA followed by Tukey test was used. *p < 0.05, **p < 0.01, ***p < 0.001.*

TABLE 2 | Experience in caring for children with special needs.

		Currently in caring		Have experience in caring		No experience as a in caring	
		***N* (%)**		***N* (%)**		***N* (%)**	
①	Children diagnosed as having disabilities	46	(21.80)	96	(45.50)	68	(32.23)
②	Children without a diagnosis but having special developmental needs	92	(43.60)	86	(40.76)	32	(15.17)
③	Children experiencing poverty	5	(2.37)	63	(29.86)	142	(67.30)
④	Children with needs for support due to their family environment	36	(17.06)	75	(35.55)	99	(46.92)
⑤	Children having been abused	16	(7.58)	74	(35.07)	120	(56.87)
⑥	Children requiring language support due to foreign nationality	32	(15.17)	70	(33.18)	108	(51.18)
⑦	Children requiring medical care	14	(6.64)	64	(30.33)	132	(62.56)

"insufficient self-expertise." The fourth factor was composed of two items (6.31% of total variance) concerned, for example, the burden of devising teaching plans, which we named "burden of increased office work." The fifth factor was composed of two items (4.61% of total variance) related to the lack of cooperation with colleagues, named "insufficient support from colleagues." The Cronbach's alpha coefficient of each factor was approximately 0.83∼0.93, which confirmed the scale's internal consistency.

Stressor Scale in Inclusive Education and the Child Care Experience of Children With Special Needs

A one-way analysis of variance was conducted to determine if there was a difference between the SSIE subscale score means and the child care experience for children with special needs. The results of the multiple comparisons are shown in the table with any one significant difference between the homeroom

TABLE 3 | Results of a factor analysis of stressors among nursery school teachers in inclusive education.

Content of items	Mean	SD	Community	Factor 1	Factor II	Factor III	Factor IV	Factor V
I. Difficulty in dealing with children (α = 0.86)								
Dealing with children having difficulties in understanding instructions and unable to act without individual	2.81	0.96	0.73	**0.89**	0.04	–0.04	–0.08	–0.08
Dealing with restless children unable to stay still	3.18	0.99	0.73	**0.88**	–0.12	0.06	–0.01	0.06
Dealing with children getting panicky, shouting, and behaving violently	3.01	1.06	0.62	**0.83**	0.01	–0.04	–0.08	0.00
Continuous problems among children	2.89	1.05	0.51	**0.68**	–0.01	0.03	0.08	–0.04
Dealing with children with strong persistence and difficulty in switching	3.17	1.61	0.33	**0.60**	–0.04	–0.04	0.03	0.00
Children having difficulties in participating in events	2.22	0.90	0.36	**0.50**	0.09	–0.10	0.04	0.13
Children having an unbalanced diet, refusing to eat school lunch or snacks	2.54	0.91	0.39	**0.49**	0.15	0.00	0.08	–0.03
Being forced to pay attention to a child always	3.35	1.21	0.33	**0.46**	0.09	0.14	0.03	–0.05
II. Human relations with parents and other children in the class (α = 0.88)								
Parents neglect of childcare	2.88	1.07	0.67	0.00	**0.87**	–0.13	0.02	–0.10
Parents do not try to understand the child's developmental delays and problem behaviors	2.99	1.09	0.67	0.04	**0.83**	–0.02	0.00	–0.07
Inability to have opportunities to talk with parents	2.52	0.91	0.53	–0.04	**0.81**	–0.02	–0.10	–0.09
Having difficulties in explaining characteristics of a child with special needs to other children in the class	2.49	0.96	0.51	0.02	**0.64**	0.10	0.07	0.07
Parents do not understand and some children are unable to receive counseling or diagnosis	2.83	1.12	0.50	0.05	**0.54**	0.18	–0.04	0.12
Having no idea how to explain the situation to other parents	2.68	0.96	0.49	0.03	**0.54**	0.02	0.22	0.07
Unable to sympathize with parents' anxieties or worries	2.34	0.86	0.42	0.02	**0.53**	0.09	–0.14	0.19
III. Insufficient self-expertise (α = 0.93)								
Lack of knowledge	3.54	0.93	0.85	–0.04	–0.01	**0.94**	0.01	–0.03
Having insufficient childcare skills	3.56	0.98	0.88	0.03	–0.01	**0.94**	0.00	–0.02
IV. Burden of keeping childcare records (α = 0.87)								
It takes too much time to maintain individual records and parent-teacher notebooks	2.97	1.21	0.79	–0.02	–0.03	0.04	**0.91**	–0.04
Developing individual guidance plans	2.90	1.22	0.76	0.04	–0.01	–0.03	**0.85**	0.04
V. Insufficient support from colleagues (α = 0.83)								
There are no colleagues to consult or learn or obtain information	2.37	1.11	0.77	–0.03	–0.04	0.02	–0.01	**0.90**
There are no colleagues to help even when I have a heavy	2.33	1.15	0.67	0.01	0.01	–0.07	0.02	**0.82**
Contribution rate (%)				33.68	7.85	7.17	6.31	4.61
Cumulative contribution ratio (%)				33.68	41.53	48.71	55.02	59.63
	Interfactor correlation			I	II	III	IV	V
	I				0.59	0.30	0.24	0.25
	III					0.46	0.22	0.32
	IIII						0.18	0.23
	IV							0.17

Lower factors are indicated in bold.

TABLE 4 | A comparison of childcare experiences and stressors for children with special needs.

		SSIE Subscale	*M*	*SD*	Minimum	Maximum	*F*	*P*	Multiple comparison
Children without a diagnosis but having special developmental needs	1. Currently in caring	Factor I	27.1	6.8	9	4.5			
	2. Having experience in caring		25.4	6.9	9	43	2.1	0.125	
	3. No experience in caring		24.8	6.3	14	39			
	1. Currently in caring	Factor II	19.2	5.0	7	33			
	2. Having experience in caring		19.6	5.4	7	35	9.4 <	0.000	1–3***
	3. No experience in caring		15.2	4.4	7	25			2–3***
	1. Currently in caring	Factor III	7.2	1.8	2	10			
	2. Having experience in caring		7.0	1.9	4	10	0.24	0.791	
	3. No experience in caring		7.2	1.9	4	10			
	1. Currently in caring	Factor IV	6.1	2.3	2	10			
	2. Having experience in caring		5.8	2.3	2	10	1.06	0.349	
	3. No experience in caring		7.3	1.9	4	10			
	1. Currently in caring	Factor V	4.4	2.0	2	9			
	2. Having experience in caring		4.9	2.3	2	10	1.27	0.284	
	3. No experience in caring		4.9	1.9	2	10			
Children without needs for support due to their family environment	1. Currently in caring	Factor I	27.0	7.4	14	4.5			
	2. Having experience in caring		27.0	6.4	10	43	2.22	0.112	
	3. No experience in caring		25.0	6.8	9	39			
	1. Currently in caring	Factor II	19.0	5.2	7	3			
	2. Having experience in caring		20.3	5.5	7	35	6.75	0.001	2–3**
	3. No experience in caring		17.4	4.9	7	31			
	1. Currently in caring	Factor III	6.8	1.7	4	10			
	2. Having experience in caring		7.1	1.7	4	10	0.61	0.544	
	3. No experience in caring		7.2	2.0	2	10			
	1. Currently in caring	Factor IV	6.5	2.1	2	10			
	2. Having experience in caring		5.8	2.2	2	10	1.68	0.190	
	3. No experience in caring		5.7	2.4	2	10			
	1. Currently in caring	Factor V	4.6	1.8	2	9			
	2. Having experience in caring		4.9	2.3	2	10	0.34	0.715	
	3. No experience in caring		4.6	2.0	2	10			
Children requiring language support due to foreign nationality	1. Currently in caring	Factor I	29.0	5.3	15	40			
	2. Having experience in caring		25.8	7.1	9	43	3.73	0.030	1–3*
	3. No experience in caring		25.4	6.8	9	45			
	1. Currently in caring	Factor II	20.0	5.3	8	33			
	2. Having experience in caring		20.0	5.7	7	35	6.02	0.000	2–3*
	3. No experience in caring		17.5	4.8	7	30			
	1. Currently in caring	Factor III	7.8	1.8	4	10			
	2. Having experience in caring		6.9	1.7	2	10	2.50	0.080	
	3. No experience in caring		7.0	1.9	4	10			
	1. Currently in caring	Factor IV	6.7	2.1	2	10			
	2. Having experience in caring		5.8	2.3	2	10	2.44	0.090	
	3. No experience in caring		5.6	2.3	2	10			
	1. Currently in caring	Factor V	4.6	2.0	2	9			
	2. Having experience in caring		4.7	2.2	2	10	0.05	0.950	
	3. No experience in caring		4.7	2.1	2	10			

*Factor 1 Difficulty in dealing with children. Factor II Human relations with parents and other children in the class. Factor III Insufficient self-expertise. Factor IV Burden of keeping childcare records. Factor V Insufficient support from colleague. One-way ANOVA Tukey test was used. The difference between groups by childcare experience shows that the former scores higher than the later. *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.*

experiences (**Table 4**). In terms of experience in caring for children without a diagnosis but having special developmental needs, there were significant differences in the SSIE subscale "Human relations with parents and other children in the class" between those who have experience in caring and those who had never been experience as a in caring, and between those who had homeroom teacher experience and those who had never been experience ($p < 0.001$).

Regarding the experience of caring for children with special needs children with needs for support due to their family environment, there was a significant difference between those who had ever been in charge of a child and those who had never been in charge of a child on the SSIE subscale "Difficulty in dealing with children" ($p = 0.001$).

Regarding the experience of teaching children with special needs children requiring language support due to foreign nationality, there was a significant difference between those who were currently in charge of a child and those who had never been in charge of a child before on the SSIE subscale "Difficulty in dealing with children" ($p = 0.03$). There was also a significant difference between those who had ever been a homeroom teacher and those who had never been a homeroom teacher on the scale "Human relations with parents and other children in the class" ($p = 0.001$).

Relationship Between Confirmatory Factor Analysis of Stressor Scale in Inclusive Education and Japanese Version of the Rathus Assertiveness Schedule

Confirmatory factor analysis with covariance structure analysis was conducted to clarify the relationship between SSIE and J-RAS. For hypothetical model 1, we assumed a path from all SSIE subscales to J-RAS. The goodness of fit of the model was $X^2 = 437.167$, df = 196, GFI = 0.896, AGFI = 0.807, CFI = 0.896, RMSEA = 0.077, and AIC = 555.167. When the adjusted indices were checked, some paths from the SSIE subscale to J-RAS were not significant, so the non-significant paths were removed and the model was reanalyzed (hypothetical model 2). The goodness of fit of the model was $X^2 = 439.561$, df = 200, GFI = 0.849, AGFI = 0.809, CFI = 0.897, RMSEA = 0.076, and AIC = 545.561. However, since the RMSEA is considered to be a better fitting model when it is less than 1 and closer to 0.05 (Toyoda, 2007), we drew a path among the error variables based on the adjusted index. In doing so, we made careful decisions to ensure that the error variables were only between SSIE subscales (Shimizu, 2003).

The goodness of fit of the model in this study was $X^2 = 384.144$, df = 197, GFI = 0.869, AGFI = 0.832, CFI = 0.919, RMSEA = 0.067, and AIC = 496.144. Therefore, the goodness of fit as a model diagram is generally achieved, and the model is considered to have good explanatory power (**Figure 1**).

The results of confirmatory factor analysis showed that the factor loadings of the five SSIE factors ranged from 0.67 to 1.01. Although it is theoretically possible for the absolute value of the standardized coefficients to exceed 1.00, it has been stated that this would mean that one would be looking for conflicting factors in two directions, positive and negative, in a single causal model (IBM, 2021). In addition, a negative correlation (-0.36) was found between the SSIE subscale of lack of Insufficient self-expertise and assertiveness scores. On the other hand, assertions were noted to be related to stress in relationships, but the path coefficient for SSIE subscale "Human relations with parents and other children in the class" was not significant (0.03).

To clarify the relationship between the basic attributes and the SSIE subscale scores, we conducted Tukey's multiple comparisons when significant differences were found after one-way analysis of variance (**Table 5**). As a result, there was a significant difference at the 1% level between the group with 4 years of experience or less and the group with 20 years of experience or more for the SSIE subscale "Human relations with parents and other children in the class" ($p = 0.003$). For the SSIE subscale "Insufficient self-expertise," there was a significant difference at the 1–5% level between age ($p = 0.007$ for respondents aged in their 20s and 40s, and $p = 0.049$ for those in their 30s and 40s) and years of experience ($p = 0.005$ for respondent aged in their 20s and 40s, and $p = 0.035$ for those in their 40s).

The Relationship Between the Number of Years of Experience of the Subject and the Stressor Scale in Inclusive Education Subscale

To clarify the relationship between years of teaching experience and SSIE subscale scores, Tukey's multiple comparisons were conducted when significant differences were found after one-way analysis of variance (**Table 5**).

As a result, for the SSIE subscale "Human relations with parents and other children in the class," there was a significant difference at the 1% level between the group with 4 years or less of experience and the group with 20 years or more of experience ($p = 0.003$). For the SSIE subscale, "Insufficient self-expertise," there was a significant difference at the 1–5% level between age ($p = 0.007$ for those in their 20s and 40s, and $p = 0.049$ for those in their 30s and 40s) and years of experience ($p = 0.005$ for those in their 20s and 40s, and $p = 0.035$ for those in their 40s).

DISCUSSION

Experience in Caring for Children With Stressor Scale in Inclusive Education and Special Needs

This study clarified whether the presence or absence of experience in caring for children with special needs affects the perception of SSIE. When caring for children with special needs who had not been diagnosed with a disability but needed special developmental support, participants who were currently or had been homeroom teachers were significantly more likely to report experiencing stressors than those who had not been homeroom teachers.

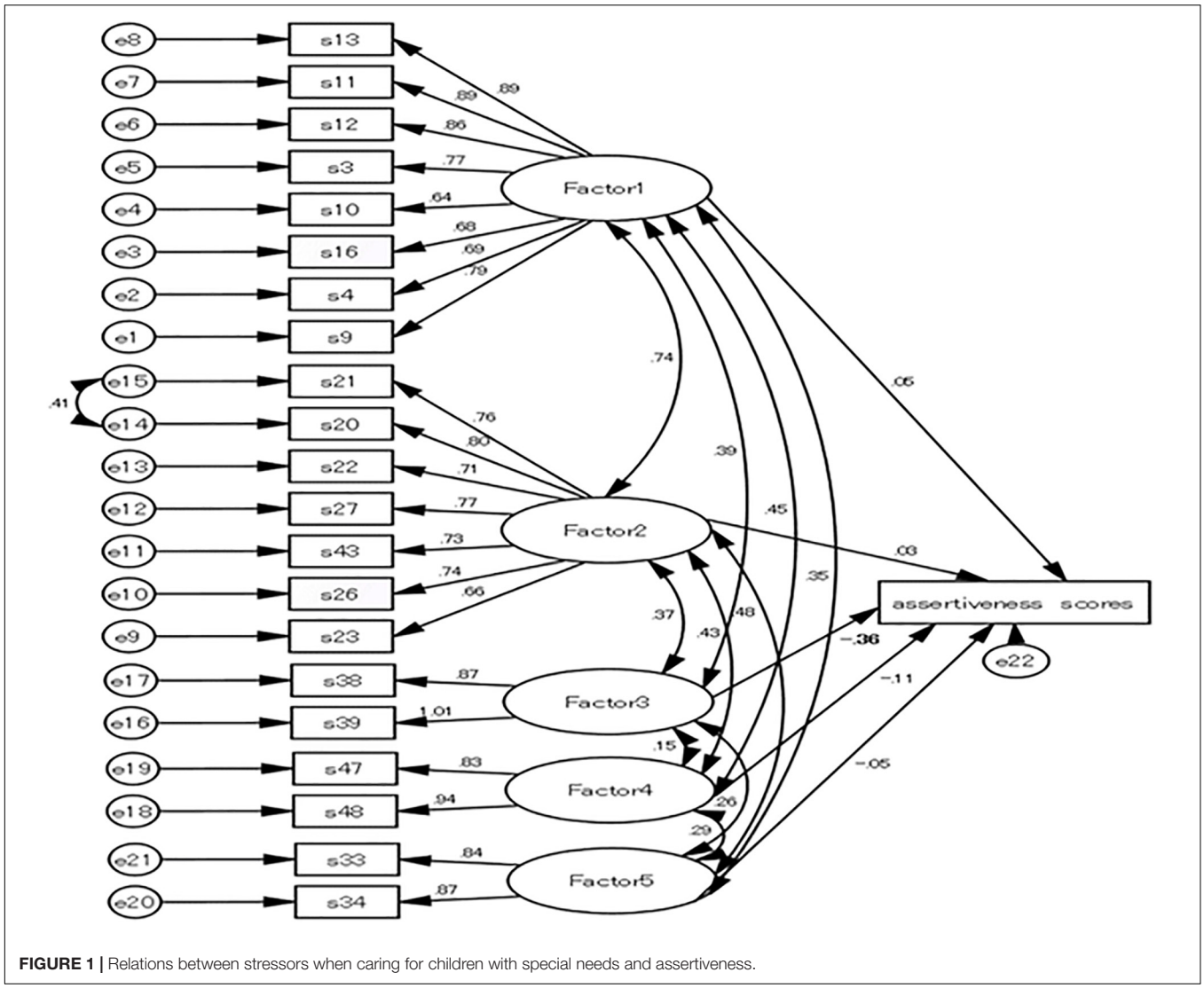

FIGURE 1 | Relations between stressors when caring for children with special needs and assertiveness.

According to Kiso (2016), when caring for children who do not have a diagnosis of disability but show aspects of developmental disabilities, stressors from relationships with parents can cause burnout. In addition, when interacting with children in early childhood, when it is difficult to diagnose developmental disorders, it was reported that some nursery school teachers hesitate to respond to parents because they do not know how to support them due to the lack of diagnosis, even for children who show characteristics of autism (Mizuuchi et al., 2007). Therefore, it is assumed that nursery school teachers report experiencing more stressors when caring for children without a diagnosis but with special needs. In addition, nursery school teachers who have experience in caring for children who need special support due to family factors, foreign nationality, or challenges with their native language felt more stressors than those who had no experience in childcare.

In Japan, "inclusive education" is a term long used to refer to the integrated care of children with disabilities. Only recently has the discussion of the perspective of "diversity" in terms of race, economic conditions, social status, ethnicity, language, religion, gender, sexual orientation, and ability begun in childcare settings (Research on Childcare Issues, 2021). In Japan, despite differences among local governments, in many cases, nursery school teachers are paid extra according to the diagnosis of disability. However, according to an Organization for Economic Co-operation and Development study, when the percentage of children with special needs is 11% or more, nursery school teachers report experiencing increased stressed (OECD, 2020). Thus, implementing improvements is necessary, for example, allocating personnel according to the condition of children with special needs and the workload of nursery school teachers.

In terms of years of experience, in addition to the three groups, there were five nursery school teachers who chose "other," and this group of nursery school teachers was assumed to include those with blanks. However, the small number of respondents may have affected the comparative statistics. Regarding the relationship between basic attributes and SSIE, nursery school

TABLE 5 | Relationship between subjects' basic attributes and the SSIE subscale.

		N(%)	Factor I			Factor II			Factor III			Factor V			Factor V		
			Mean	SD	*p*	Mean	SD	*p*	Mean	SD	*p*	Mean	SD	*p*	Mean	SD	*p*
Overall		210(100)	26.08	6.82		18.73	5.29		7.1	1.84		5.87	2.28		4.7	2.1	
Sex	1. Male	12 (5.7)	28	5.36		18.5	2.5		7.67	1.97		6.33	2.15		5	2.04	
	2. Female	198(94.3)	25.97	6.89		18.74	5.42		7.07	1.84		5.84	2.29		4.69	2.11	
Age	1. Under 29 years old	70(33.3)	26.53	7.08		17.4	4.92		7.56	1.95		5.94	2.36		4.49	1.92	
	2. 30 to 39 years old	56(26.7)	25.6	7.3		19.09	6.51		7.36	1.69	1–3**	5.76	2.54		5.26	2.54	
	3. 40 to 49 years old	39(18.6)	25	6.63		19.27	4.23		6.38	1.83	2–3*	5.84	2.34		4.51	1.93	
	4. Over 50 years old	45(21.4)	26.88	6.01		19.81	4.77		6.73	1.65		5.89	1.83		4.52	1.85	
Years of experience	1. Under 4 years old	52(24.8)	25.46	7.12		16.95	4.88		7.54	1.86		5.49	2.28		4.54	1.69	
	2. 5 to 19 years old	113(53.8)	26.16	6.64		18.94	5.34		7.17	1.8		6.12	2.08		4.8	2.3	
	3. Over 20 years old	40(1.9)	26.69	7.01		20.48	5.09	1–3**	7.17	1.8	1–3**	6.12	2.38		4.8	2.3	
	4. other	5 (2.4)	26.08	6.82		18.73	5.29		7.1	7.84		5.87	2.28		4.7	2.1	
Post	1. Principal, Vice	20 (9.5)	25.33	6.34		20.82	5.18		7.06	1.47		5.6	1.83		4.24	2.02	
	2. Class teacher	167 (79.5)	26.11	7.01		18.33	5.14		7.03	1.89		6.02	2.37		4.79	2.07	
	3. Other	23 (11.0)	26.59	5.99		19.74	6.08		7.7	1.79		4.99	1.87		4.52	2.39	
Establish	1. Municipality	47 (22.4)	26.38	6.53		19.35	4.66		6.94	1.7		5.87	2.35		4.85	1.73	
	2. Social Welfare	105 (50.0)	36.4	6.96		18.63	5.48		6.93	1.87		5.87	2.23		4.55	2.18	
	3. Corporation	44 (21.0)	34.79	6.69		18.28	5.46		7.32	1.84		8.48	2.47		4.76	2.221	
	4. Other (Religious)	14 (6.7)	26.72	7.35		18.79	5.7		8.29	1.86		7.05	1.55		5.21	2.33	

*Factor I Difficulty in dealing with children. Factor II Human relations with parents and other children in the class. Factor III Insufficient self-expertise. Factor IV Burden of keeping childcare records .Factor V Insufficient support from colleague. One-way ANOVA Tukey test was used. The difference between groups by childcare experience shows that the former scores higher than the later. *p < 0.05, **p < 0.01, ***p < 0.001.*

teachers with fewer years of experience were more likely to report experiencing "Human relationships with parents and other children in the class" than those with more years of experience. In addition, nursery school teachers with more years of experience are less likely to report "Insufficient self-expertise." In Japan, early turnover of nursery school teachers and latent nursery school teachers have become a social problem, and this raises the importance of providing support for nursery school teachers with limited experience.

Relationship Between the Stressor Scale in Inclusive Education and the Japanese Version of the Rathus Assertiveness Schedule

Assertiveness is difficult to measure and evaluate because it may be affected by various factors such as country, partner, job position, and age (Mitamura and Mathumi, 2010). In Japan, the tendency is to avoid confrontation and unpleasantness via communication (Sungsuk, 2018); thus, high assertiveness scores can be judged as aggressive (Mitamura and Mathumi, 2010). Comparing J-RAS scores is thus problematic. Nevertheless, the J-RAS scores of nursery school teachers in this study tend to be lower than those of nursery school teachers in other countries and higher than those of individuals in the nursing profession in Japan. Nurses in Japan in particular tend to have very low assertiveness scores because they are required to act as mediators between doctors and patients and because they are in a profession in which medical accidents are directly related to human lives (Suzuki et al., 2017). Notably, nursery school teachers were reported to more accustomed to working in teams than kindergarten teachers (Isono et al., 2008).

Regarding the relationship between the SSIE subscale and assertiveness of nursery school teachers, there was a negative correlation between "Insufficient self-expertise" and assertiveness scores, indicating that individuals with lower assertiveness scores were more likely to report experiencing a strong sense of insufficient self-expertise. Caregivers were reported to have insufficient knowledge, awareness, and skills when caring for children with special needs, because a high level of skill is required (Gezer and Aksoy, 2019). Alternatively, Hiraki (2009) stated that low assertiveness and low confidence are connected (Hiraki, 2009). Therefore, viewing, "Insufficient self-expertise" from two aspects—the low self-esteem of nursery school teachers and the insufficient expertise—is important.

According to Park et al. (2018), the concerns that early childhood teachers have about inclusive education are mediated by their background variable, "confidence," and training to improve confidence is of paramount importance (Park et al., 2018). Because high assertiveness was also observed to affect self-confidence (Hiraki, 2009), improving assertiveness will have a positive effect on confidence in inclusive education.

Limitations of This Study and Further Research

In this study, we developed the SSIE, which assumes stressors in caring for children with special needs. In examining the stress reported by nursery school teachers, consideration of the impact of stressors on stress responses is necessary. In addition, there is a subscale that consists of two items. Therefore, further research could clarify the causal relationship between our SSIE and the stress response, and to clarify the reproducibility of the factors.

In addition, this study revealed a link between assertiveness and the SSIE subscale, "Lack of Self-Expertise." No studies have examined the effects of assertiveness training on nursery school teachers (Shiratori et al., 2021). However, studies with nurses have shown that assertiveness training can increase assertiveness levels (Yoshinaga et al., 2018). Therefore, developing assertiveness training for nursery school teachers and verifying its effectiveness are necessary.

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author/s.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by the Research Ethics Committee, Faculty of Humanities, Tsukuba University. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

MS and MK made an important contribution in writing this manuscript. MS led the writing work. Both authors contributed to the article and approved the submitted version.

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Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.