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Do it yourself: The role of early self-care ability in social skills in Japanese preschool settings

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Abstract
Self-care ability and social skills are potential areas of difficulty for preschool children. However, values about young children's self-care ability are different worldwide. This longitudinal study examined the influence of early self-care ability on social skills at the end of the preschool years. Participants were 509 children recruited from kindergartens and child care centers across Japan, whose self-care ability and social skills were assessed at baseline year and three years later (Age of children in 2015 at baseline: M = 35 months, SD = 6.1 months). The study found that gender was significantly associated with social skills, while preschool facility entrance age was only associated with assertion skills. After controlling gender and entrance age, early self-care ability was still positively related to later assertion and cooperation (Assertion: OR = 2.55, 95% CI = 1.00–6.51; Cooperation: OR = 3.15, 95% CI = 1.23–8.07). Implications of the findings are discussed in the context of cultural diversity, highlighting the importance of cultivating children's age-appropriate self-care ability based on daily observations and evaluations.

Keywords
self-care ability, social skills, gender, entrance age, Japanese context

Introduction

In Japan, "do it yourself" is a commonly used phrase in both preschool facilities and families to encourage children to participate in daily living activities and do what they can by themselves, such as eating, dressing, toileting, and washing (Ministry of Education,

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Culture, Sports, Science and Technology of Japan, 2008). With the development of basic functions, such as motor and language skills, self-care skills could be learned from early childhood, influenced by caregivers' perceptions of early self-care ability (Casper & Smith, 2004). A comparison study of maternal expectations in Japan, India, and England indicated that Japanese mothers had the highest expectations for self-care ability at an earlier child age (Joshi & MacLean, 1997). In Japanese culture, self-care ability is regarded as a very important part of early development and school readiness (Sato et al., 2020).

Self-care ability is one of the basic life skills, including, but not limited to, eating behaviors, maintaining good hygiene, dressing, and safety awareness. Developing age-appropriate self-care ability is the first step toward becoming independent for young children, which is an important stage of psychological development (Hazen et al., 2008). A survey of Australian teachers' perceptions of school readiness indicated that a child's age-appropriate self-care ability contributes to the quality of a teachers' class management and daily activities (Serry et al., 2014). For example, teachers expected that children could go to the toilet independently in the daytime by five years of age. However, there are no clear findings showing that children who are not independent in toileting are not ready to receive schooling.

Social skills are defined as socially acceptable behaviors that enable an individual to effectively communicate with others (RoseKrasnor, 1997). Assertion, self-control, and cooperation are commonly listed as three important dimensions in social skills across cultures (Elliott & Busse, 1991). Social skills have been demonstrated to enable social adaptation and social relationships over all the stages in life, as well as dropout reduction and academic achievement in school (Del Prette et al., 2012; Oakland & Wechsler, 1990; Pečjak et al., 2009). For example, improved social skills of six-year-old children contribute to good school readiness and emotional and behavioral traits (Arslan et al., 2011). Social skills are determined by complex interactions among individuals, home-rearing, and school environments; peer relationships; and the larger sociocultural context (Riggio, 1986). Age, gender, family structure, socioeconomic status (SES), and rearing environment are considered as common related factors for social skills (Daffner et al., 2020; Hosokawa & Katsura, 2017; Nelson et al., 2020). Social skills also interact with other skills. For example, better gross motor and fine motor skills contribute to developing children's autonomy (MacDonald et al., 2017; Moser et al., 2018). Delayed talking increases the risk of acquiring behavioral problems and having low social competence (Irwin et al., 2002).

However, a few previous studies have focused on the association between self-care ability and social skills. Several studies have indicated a relationship between self-care ability and social disorders. For example, studies on children with autism spectrum disorder (ASD) have revealed that the development of self-care skills in daily life contributes to children's future independence and successful transition to adulthood (Bennett & Dukes, 2013; Gray et al., 2014). A four time-point longitudinal study further revealed increasing daily living skills contributes to slowing the progression of ASD severity from diagnosis to the end of grade one (Di Rezze et al., 2019). In the context of primary health care, teaching self-care skills is an integral part that individuals, family

members, and the community should engage in to maintain good health (World Health Organization, 2009). In the school psychology field, very few findings have demonstrated the influence of early self-care ability on social skill outcomes among typically developing children.

To fill gaps in existing research, the present three-year longitudinal study examined whether early self-care ability impacts social skills at the end of the preschool years. We aimed to investigate (1) the influence of early self-care ability on social skills and (2) the effects of potentially related factors on demographics and the rearing environment. We hypothesized that age-appropriate self-care ability in early childhood would contribute to social skill development. Moreover, gender difference and the role of entrance age in the association would be explored in the present study under the context of Japanese preschool settings.

Methods

Study design and participants

This study was a part of a population-based study named the Child Care Cohort Study (CCC), involving more than 1000 children and families from early childhood education and child care centers across Japan every year. In the CCC program, children's development, including self-care ability and social skills, were evaluated by trained teachers (each teacher was trained on observation-based evaluation skills for at least eight hours) in kindergartens and child care centers. Two commonly used Japanese measurements of child development were used in the structured evaluations based on daily observations: (1) the "Child Development Scale" (CDS) (Tumori, 1974) and (2) the "Social Skill Scale" (SSS) (Anme et al., 2013). Children's parents provided the demographic information through self-reported questionnaires.

The current study used secondary data from the CCC program. In 2015 as the baseline, 672 children, aged two to three years old, were recruited for the current study. Of these, 43 children diagnosed with any disability, developmental disorder or developmental delay were excluded from the analysis. After three years' follow-up, data of 120 children (19.1%) failed to be fully collected. Therefore, data of 509 children (M_{age} = 35 months, SD = 6 months) were included in the final analysis sample.

In the final sample, the distribution of boys and girls was fairly even (boys: 54.2% and girls: 45.8%). Most children lived with siblings (57.2%) and extended family (75.2%). Regarding the entrance age, 60.3% of children enrolled in the preschool facilities before they were 1 year old, 28.5% enrolled at 1–2 years of age, while 11.2% enrolled when aged over 2 years.

Measurement

Self-care ability. Self-care ability was measured using a subscale of the CDS. The CDS was used to measure child development in all authorized child daycare centers across Japan and established the Japanese norm-reference values in 2010 (Anme & Segal,

2010). To date, the scale has been used for 51,000 Japanese children aged 0–6 years and revealed that relationships among home-rearing environment, quality of childcare, and child development are consistent with the results from the National Institute of Child Health and Human Development (NICHD) (Anme, Shinohara, et al., 2012; Anme, Tanaka, et al., 2012). The CDS provides a list of usual daily behaviors for each age point as indicators to assess children's level of development. For example, one indicator for 27 months is taking off pants without assistance and for 30 months is unassisted eating without spilling. In the present study, children's self-ability was evaluated as age-appropriate or low, based on the measurement manual. If a child gets two or more consecutive "no" answers in the line-up of milestone questions, the child's development is considered low; otherwise, the child's development is considered age-appropriate.

Social skills. Social skills were measured using SSS, which consists of 24 items assessing three dimensions (i.e., "assertion," "cooperation," and "self-control"). SSS is a brief screening questionnaire for teachers or childcare practitioners in kindergartens and child care centers to assess children's social skills. SSS shows good reliability in Japanese samples of children aged 1–6 years old (Anme et al., 2013). Cronbach's alpha coefficients for SSS in the current study were estimated for both baseline (Assertion subscale: $\alpha = 0.85$; Self-control subscale: $\alpha = 0.92$; Cooperation subscale: $\alpha = 0.93$; Total scale: $\alpha = 0.88$) and follow-up year (Assertion subscale: $\alpha = 0.80$; Self-control subscale: $\alpha = 0.90$; Cooperation subscale: $\alpha = 0.94$; Total scale: $\alpha = 0.93$), showing high reliability indices ranging from 0.80 to 0.94. SSS also shows the stability of factor structures, which are consistent with Social Skills Rating Systems (Gresham et al., 2011), and predictive validity from a nationwide cohort study in Japan (Takahashi et al., 2008). The assertion subscale includes eight items regarding initiating actions, such as "Initiates talk with another person" and "Expresses appropriate greetings to others." The self-control subscale includes eight items regarding expressions of personal emotions and behaviors, such as "Postpones gratification when requested" and "Waits for his/her turn." The cooperation subscale includes eight items regarding the prosocial behaviors in social interactions, such as "Helps friends when friends get hurt" and "Brings cheer to friends who look lonely." Possible responses to each item are as follows: 2 for "always," 1 for "sometimes," and 0 for "never." Scores for each subscale range from 0 to 16, with total scores ranging from 0 to 48. Because scores for the SSS are not normally distributed, they are cut off into dichotomous variables with 10% measured from the negative region of the spectrum to simplify the analyses and interpretation (Estecha Querol et al., 2021; Takahashi et al., 2015). In other words, children whose score for SSS was in the bottom 10% of the same-age total sample were considered to have a low level of social skills and the rest were considered to have a normal level of social skills.

Covariates. Based on previous studies, age, gender, having siblings or not, family structure, and preschool facility entrance age were considered as covariates in the analysis models (Dunn & Munn, 1986). The family structure included two types in the present study: living with their nuclear family and living with their extended family. The

preschool facility entrance age was categorized into three groups: under 1 year old, 1–2 years old, and over 2 years old.

Data analysis

First, we used descriptive statistics to confirm demographics, baseline condition of self-care ability and social skills. Second, the Chi-square test, Mann–Whitney U test, and Spearman's rank correlation were used for bivariate analysis to examine the association between predictors and social skills three years later. Variables significantly related to social skill outcomes were used in the following analyses ($p < 0.1$). Third, multiple logistic regression models, including unadjusted model, adjusted model, and fully adjusted model, were used step-by-step to determine the influence of early self-care ability on social skill outcomes. If self-care ability was not significant in the model ($p < 0.05$), the next analysis step would not be executed. IBM SPSS 26.0 was used for data analysis.

Ethical considerations

Parents whose children participated in the study were informed about the study's objectives, process, and the right to withdraw from the study at any time. At least one of the parents provided written informed consent. All research procedures were reviewed and approved by the ethics committee of the University of Tsukuba (1657).

Results

Table 1 shows the results of bivariate analysis. 7.7% children developed low self-care ability in the baseline year. Early self-care ability was significantly associated with assertion ($p = 0.004$), self-control ($p = 0.075$), cooperation ($p < 0.001$), and overall social skills ($p = 0.008$). Meanwhile, gender was also related to assertion ($p = 0.004$), self-control ($p < 0.001$), cooperation ($p = 0.001$), and overall social skills ($p < 0.001$). However, entrance age was only related to assertion ($p = 0.023$).

Table 2 shows the median, minimax, and correlations of baseline and follow-up social skills. The scores of self-control (Median = 8) and cooperation (Median = 4) were much lower than assertion scores (Median = 15) at baseline; however, the scores became basically the same at the end of preschool years (Median: assertion = 16, self-control = 15, cooperation = 15). Meanwhile, assertion, self-control, cooperation, and overall social skills at baseline were all correlated with the follow-up social skills at the end of preschool years ($p < 0.01$).

In Table 3, both unadjusted and adjusted models revealed the contributing role of age-appropriate self-care ability in social skills. The results of the unadjusted model were significant, indicating that age-appropriate self-care ability in early years was positively associated with assertion (OR = 3.79, 95% CI = 1.60–8.95), self-control (OR = 2.67, 95%CI = 1.04–6.86), and cooperation (OR = 5.02, 95%CI = 2.07–12.13), as well as overall social skills (OR = 3.42, 95%CI = 1.46–8.03). Even when adjusted for both demographics and baseline social skills, early self-care ability was positively

Table 1. Descriptive statistics and bivariate analysis among demographics, early self-care ability, and social skills (N = 509).

Characteristics (Baseline)	N	%	Assertion		Self-control		Cooperation		Overall social skills	
			Z/χ^2	*P*	Z/χ^2	*p*	Z/χ^2	*p*	Z/χ^2	*p*
Age	35 ± 6.1[a]		−0.48	0.630	−0.13	0.89	−1.06	0.291	−1.85	0.065
Gender			8.07	0.004	21.88	<0.001	11.69	0.001	12.39	<0.001
Boy	276	54.2								
Girl	233	45.8								
Siblings			0.17	0.684	0.02	0.898	1.41	0.235	0.15	0.702
Only child	139	27.3								
With siblings	291	57.2								
Missing	79	15.5								
Family structure			1.41[b]	0.236	1.01[b]	0.316	0.00[b]	0.762	0.00[b]	1.000
Nuclear family	383	75.2								
Extended family	49	9.6								
Missing	77	15.1								
Entrance age			7.51	0.023	0.08	0.959	0.83	0.661	0.33	0.846
≤ 1 year old	307	60.3								
1–2 years old	145	28.5								
> 2 years old	57	11.2								
Self-care ability			8.46[b]	0.004	3.18[b]	0.075	12.75[b]	<0.001	7.12[b]	0.008
Low	39	7.7								
Age-appropriate	470	92.3								

Note: [a] refers to mean age and standard deviation, the unit is a month.
[b]Refers to the continuous correction Chi-square test.

Table 2. Median, minimax and correlations of baseline and follow-up social skills.

	Median	Minimax	1	2	3	4	5	6	7	8
Assertion at 2–3 years old	15	(2, 16)								
Self-control at 2–3 years old	8	(0, 16)	0.46**							
Cooperation at 2–3 years old	4	(0, 16)	0.39**	0.59**						
Overall social skills at 2–3 years old	28	(2, 48)	0.65**	0.87**	0.86**					
Assertion at 5–6 years old	16	(5, 16)	0.25**	0.15**	0.20**	0.22**				
Self-control at 5–6 years old	15	(0, 16)	0.18**	0.23**	0.19**	0.24**	0.33**			
Cooperation at 5–6 years old	15	(0, 16)	0.34**	0.30**	0.31**	0.37**	0.44**	0.49**		
Overall social skills at 5–6 years old	44	(5, 48)	0.32**	0.29**	0.30**	0.36**	0.51**	0.76**	0.91**	

Note: numbers represent Spearman's correlation coefficients, $^{*}p < 0.05$, $^{**}p < 0.01$.

Table 3. Multiple logistic regression models showing the association between early self-care ability and social skills.

Variables (Baseline)	Model 1			Model 2			Model 3		
	OR	95% CI		OR	95% CI		OR	95% CI	
	Assertion								
Self-care ability	3.79**	1.60	8.95	3.17*	1.30	7.74	2.55*	1.00	6.51
Gender				2.51*	1.14	5.49	2.51*	1.14	5.55
Entrance age									
≤ 1 year old				2.68*	1.10	6.53	2.61*	1.05	6.50
1–2 years old				1.86	0.72	4.82	1.81	0.69	4.78
>2 years old				Ref					
Assertion							3.56**	1.47	8.63
	Self-control								
Self-care ability	2.67*	1.04	6.86	2.24	0.84	5.97			
Gender				10.19**	3.07	33.88			
Entrance age									
≤ 1 year old				0.75	0.24	2.35			
1–2 years old				0.79	0.23	2.70			
> 2 years old				ref					
	Cooperation								
Self-care ability	5.02**	2.07	12.13	4.24**	1.71	10.53	3.15*	1.23	8.07
Gender				4.39**	1.63	11.79	4.32**	1.61	11.63
Entrance age									
≤ 1 year old				1.12	0.38	3.31			
1–2 years old				1.35	0.40	4.52			
> 2 years old				ref					
Cooperation							3.66**	1.69	7.92
	Overall social skills								
Self-care ability	3.42**	1.46	8.03	3.01*	1.25	7.25	2.12	0.84	5.36
Gender				3.59**	1.61	8.02	3.77**	1.68	8.46
Entrance age									
≤ 1 year old				0.91	0.32	2.59			
1–2 years old				0.83	0.27	2.53			
> 2 years old				ref					
Overall social skills							4.30**	1.88	9.86

Note: OR = odds ratio; CI = confidence interval; reference group: gender = boy, self-care ability = low, social skills = low level, entrance age = > = 2 years old; Model 1 was unadjusted; Model 2 was adjusted for gender, and entrance age; Model 3 was fully adjusted for all significantly related factors and baseline social skills.
*$p < 0.05$, **$p < 0.01$.

associated with assertion (OR = 2.55, 95% CI = 1.00–6.51) and cooperation (OR = 3.15, 95% CI = 1.23–8.07).

Table 3 also shows gender was associated with social skills. Compared to boys, girls were likely to have better assertion (OR = 2.51, 95% CI = 1.14–5.55), self-control

(OR = 10.19, 95% CI = 3.07–33.88), cooperation (OR = 4.32, 95% CI = 1.61–11.63), and overall social skills (OR = 3.77, 95% CI = 1.68–8.46). Entrance age was also associated with assertion. In the fully adjusted model, compared to entering preschool facilities after two years old, entering child care centers before one year old was positively associated with the assertion (OR = 2.61, 95% CI = 1.05–6.50).

Discussion

Although the effects of self-care ability have been highlighted in the medical care and rehabilitation field, little is known about the influence of early self-care ability on children's social skills and school readiness (Asadi et al., 2019; Burgess et al., 2020; Robison et al., 2020). The present study examined the association between early self-care ability and social skills among typically developing children in a school setting.

In the current Japanese sample, 7.7% of children were reported to have lower self-care ability than their age-appropriate level. However, the development of young children's self-care ability by age is different worldwide. In urban areas of China, 18% of young children (M_{age} = 43.4, SD = 3.63) showed low levels of self-care ability at their age (Xie & Li, 2021). In a central city in Malatya Province of Turkey, more than half of five to six years old children understood to wash hands and gather toys, while nearly half of them had awareness of eating on time and brushing their teeth (Koksalan et al., 2017). Japanese children tend to develop good self-care ability at an early age, which might be the result of traditional Japanese expectations of individual independence (Doi et al., 2018). Caregivers in Japan likely encourage children to participate in age-appropriate daily living activities instead of intervening to complete what should have been done by children themselves.

In the field of school psychology, self-care has been demonstrated to be one of the predictors of school readiness, together with socio-emotional skills (Majzub & Rashid, 2012; Xie & Li, 2019). Going beyond previous studies, our finding confirmed that age-appropriate self-care ability at two to three years old positively predicts assertion and cooperation skills at the end of preschool years regardless of gender and the entrance age of preschool. This finding is also supported by intervention experiments. For example, a recent intervention study suggested teaching four to five years old children with ASD basic self-care skills, such as washing their face, improve their independence and parents' satisfaction (Boutain et al., 2020). Noteworthily, age-appropriate self-care ability is acquired by children in home and childcare environments within safety and enrichment activities (Johnson et al., 1995; Rodman et al., 1985). Shumow et al. (2009) suggested that if children were always arranged in unsupervised self-care conditions, they would be at risk for less frequent positive relationships and social benefits. Therefore, "do it yourself" does not mean leaving young children alone, but giving children support and encouragement by their side.

Our study also contributes to the literature with results showing the effects of gender and entrance age on social skills using a Japanese sample. Gender differences in social skills were reported inconsistently in the literature (Rose & Rudolph, 2006). Many studies from different cultures demonstrated that girls have superior social skills

(Ghorbani et al., 2004; Wong & Yeung, 2019), while some studies have reported that gender differences are not obvious (Roth-Hanania et al., 2011). The present study highlights that girls' social skills may be better developed than that of boys at the same age in the Japanese context. Moreover, existing results about association between entrance age and child social development are also inconsistent in previous studies. We found that children who enter preschool facilities before one year old tend to have better social skills than those who enroll after two years old. Our finding is supported by a cross-sectional study indicating the entrance to child care centers before one year old results in greater social skills among girls (Arace et al., 2021). However, a longitudinal study of German children under three years old demonstrated that more years spent in preschool facilities significantly relates to fewer peer problems, but shows no significant effects on prosocial behaviors (Linberg et al., 2020). Understanding and adjusting for the role of gender and entrance age helps to explore and explain the association between early self-care ability and social skills.

Limitations and future directions

This study has several limitations that should be considered when interpreting its results and designing future studies. First, we chose age, gender, siblings, family structure, entrance age, and baseline year's social skills as the cofounding variables based on previous studies. However, only gender, entrance age, and baseline year's social skills were significantly related to the follow-up year's social skills in this study and discussed in the final analysis model. Also, although we have considered several cofounding variables, SES was not included in the current study because there is no information about SES in the secondary data. A study using a Guatemalan preschool sample indicated that compared to children in low SES settings, children in high SES settings got significantly greater social-emotional learning gains following an intervention program (Clinton et al., 2015). It is necessary to conduct further studies that include SES as a related factor and test the effect of SES on the association between self-care ability and social skills.

Second, the sample size was small because of the loss of follow-up; thus, the confidence interval was wide. Because of the limited sample size, the gender difference was not tested using hierarchical regression in the current study. Future studies should use a larger sample size to identify the predictive effects of early self-care ability along with gender differences.

Third, although we had measured the early self-care ability using a Japanese scale with high reliability and validity, it is difficult to compare our results with those of other studies using different measurements.

Finally, the data of the current study were only collected in Japan, and the generalizability of the results is limited. Even though we have discussed the results in the context of cultural diversity, there might be differences in the association between self-care ability and social skills across cultures. As a result, more sample variety from different cultural contexts is required in future research.

Implications of the study findings

Both self-care and social behaviors are essential skills for a person to be accepted in society. Early childhood is a critical period for children to acquire these two skills, which influence school readiness, school achievement, and even life success (Bakken et al., 2017; Maleki et al., 2019). High-quality screening scales are useful for school psychologists and teachers to understand children's behaviors in preschool settings (Behar & Stringfield, 1974). In the current study, CDS and SSS were used as early screening tools to observe and evaluate children's self-care ability and social skills. In practice, we recommend school psychologists and teachers use effective screening tools to assess children's self-care ability at the start of the preschool years. School psychologists also should take responsibility to train preschool teachers and parents to apply observation and evaluation techniques in the daily child care process.

Based on the findings, we also suggest parents should take early self-care ability seriously. We recommend that parents provide children with appropriate opportunities for modeling and practice to develop a child's age-appropriate self-care ability and social skills in preschool years. For example, parents should guide children over two years of age to wash hands or dress by themselves, wait for children to try their best and support children by their side.

Conclusion

Age-appropriate self-care ability at two to three years old was found to be associated with improved assertion and cooperation skills at the end of the preschool years regardless of gender and entrance age. We recommend school psychologists, preschool teachers and parents support children to develop age-appropriate self-care ability from early childhood and improve social skills at the end of preschool years.

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Ethics approval statement

All research procedures were reviewed and approved by the Institutional Review Board and ethics committee of Tsukuba University [1657].

Data availability

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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No copyrighted materials have been used in the manuscript.

Conflict of interest statement

The contributing authors have no potential conflict of interest.

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