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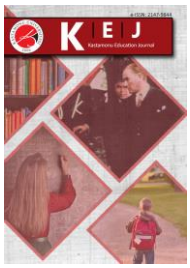

| Research Article / Araştırma Makalesi |

Relationship between Socio-Dramatic Play and Self-Regulation Skills in Early Childhood

Erken Çocuklukta Sosyo-Dramatik Oyun ve Öz-Düzenleme Becerileri Arasındaki İlişki[1]

Özge ÖZCAN[2], Asiye İVRENDİ[3]

Keywords

1. Self-regulation skills
2. Working memory
3. Inhibitory control
4. Attention flexibility
5. Socio-dramatic play

Anahtar Kelimeler

1. Öz-düzenleme becerileri
2. Çalışma belleği
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Abstract

Purpose: Socio-dramatic play is important for supporting self-regulation skills in early childhood, and the complexity level of socio-dramatic play may increase the need for self-regulation skills. This study examined the relationship between the self-regulation skills of 60- to 86-month-old preschoolers and the complexity of socio-dramatic play better to understand the link between socio-dramatic play and self-regulation skills.

Methodology: This study was designed as associational research to examine whether self-regulation skills based on teachers' and mothers' views relate to socio-dramatic play's aspects and complexity levels. The participants consisted of 51 preschool children attending two public schools in Turkey. Children's self-regulation skills (attention, working memory, and inhibitory control) were measured using self-regulation scales with teacher and mother forms. The socio-dramatic play was assessed using an observational tool consisting of three aspects (symbolic agent, symbolic substitution, and symbolic complexity).

Findings: Findings revealed that self-regulation skills (inhibitory control and attention) showed a statistically significant difference in favor of children who engaged in sociodramatic play with high symbolic complexity. The working memory did not differ significantly regarding symbolic complexity. The teacher and mother reports revealed that self-regulation skills' attention, working memory, and inhibitory control dimensions did not relate to the aspects of symbolic agent and symbolic substitution.

Highlights: These findings indicate that only the symbolic complexity aspect of socio-dramatic play is positively associated with preschoolers' self-regulation skills (inhibitory control and attention). Results were discussed concerning the literature on socio-dramatic play and self-regulation.

Öz

Çalışmanın amacı: Sosyo-dramatik oyun, erken çocukluk döneminde öz-düzenleme becerilerini desteklemek için önemlidir ve sosyo-dramatik oyunun karmaşıklık düzeyi, öz-düzenleme becerilerine olan ihtiyacı artırabilir. Bu çalışmada, sosyo-dramatik oyun ile öz-düzenleme becerileri arasındaki bağlantıyı daha iyi anlamak için 60-86 aylık okul öncesi çocukların öz-düzenleme becerileri ile sosyo-dramatik oyunun karmaşıklığı arasındaki ilişki incelenmiştir.

Materyal ve Yöntem: Bu çalışma, öğretmenlerin ve annelerin görüşlerine dayalı olarak öz düzenleme becerilerinin sosyo-dramatik oyunun boyutları ve karmaşıklık düzeyleri ile ilişkili olup olmadığını incelemek amacıyla ilişkisel araştırma olarak tasarlanmıştır. Katılımcılar, Türkiye'de iki devlet okuluna devam eden 51 okul öncesi dönem çocuğundan oluşmaktadır. Çocukların öz-düzenleme becerileri (dikkat, çalışma belleği ve engelleyici kontrol) öğretmen ve anne formları olan öz-düzenleme ölçekleri kullanılarak ölçülmüştür. Sosyo-dramatik oyun, üç boyuttan (sembolik araç, sembolik yerine koyma ve sembolik karmaşıklık) oluşan bir gözlemsel araç kullanılarak değerlendirilmiştir.

Bulgular: Bulgular, öz düzenleme becerilerinin (engelleyici kontrol ve dikkat), sembolik karmaşıklığı yüksek sosyo-dramatik oyun oynayan çocuklar lehine istatistiksel olarak anlamlı bir farklılık gösterdiğini ortaya koymuştur. Çalışma belleği, sembolik karmaşıklık açısından anlamlı düzeyde farklılık göstermemiştir. Öğretmen ve anne raporları, öz-düzenleme becerilerinin dikkat, çalışma belleği ve engelleyici kontrol boyutlarının sembolik araç ve sembolik yerine koyma boyutlarıyla ilişkili olmadığını ortaya koymuştur.

Önemli Vurgular: Bu bulgular, sosyo-dramatik oyunun yalnızca sembolik karmaşıklık yönü ile okul öncesi dönem çocuklarının öz-düzenleme becerileri (engelleyici kontrol ve dikkat) arasında pozitif bir ilişki olduğunu göstermektedir. Sonuçlar, sosyo-dramatik oyun ve öz-düzenleme alan yazınıyla ilişkilendirilerek tartışılmıştır.

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[2] **Corresponded Author,** Pamukkale University, Institute of Educational Sciences, Early Childhood Education Department, Denizli, TURKEY; https://orcid.org/0000-0001-8687-5956
[3] Pamukkale University, Faculty of Education, Early Childhood Education Department, Denizli, TURKEY; https://orcid.org/0000-0002-0555-9247

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INTRODUCTION

Self-regulation (SR) is at the center of children's learning in the early years (Blair & Raver, 2015). Research shows that children who demonstrate SR skills have high mathematics (Ivrendi, 2011; Schmitt et al., 2017) and language skills (Gözüm & Uyanık-Aktulun, 2021; Skibbe et al., 2019), and higher school success in later grades (Skibbe et al., 2019). The idea that play helps children's learning and development are also widely held (Nicolopolou, 2019). For instance, playing promote SR abilities such as attention, reasoning, impulse control, and the capacity to reflect on and regulate one's thoughts and emotions (O'Sullivan & Ring, 2018; Savina, 2014). Some scholars alleged that pretend play or socio-dramatic (SD) play supports the developmental areas of the child, specifically SR (Bergen, 2002; Breedekamp, 2004). Previous research showed that this type of play creates a potential for the development of SR (Elias & Berk, 2002; Thibodeau et al., 2016).

However, Lillard et al. (2013), in their critical review, in which they evaluated whether pretend play contributed significantly to SR, asserted questionable conclusions about the role of pretend play in SR. The authors questioned whether pretend play has a causal effect on SR and whether the relationship between SR and pretend play is due to a third unmeasured or noncontrolled factor. They concluded that there is insufficient research to claim that pretend play improves SR and presented inconsistent findings from previous studies examining the association between these two concepts. According to these inconsistent correlational findings, it is hard to conclude that SR and pretend play are causally related. However, current research that shows a relationship between these two concepts is increasing (Bauer & Gilpin, 2022; White et al., 2021). At the same time, limited research findings reveal that pretend play has a causal effect on SR skills (Thibodeau et al., 2016). Nevertheless, more research is still required to learn more about the association between SR and pretend play.

Pretend play is generally associated with Vygotsky's sociocultural theory, in which pretend play involves symbolic representations in reproductions of remembered social situations. In pretend play, the child enacts the role of the mother and speaks to the doll, similar to how their parents and teachers talk with her/him about socially appropriate behaviors (Bodrova et al., 2013). The Vygotskian perspective states that pretend play evolves into SD or mature play with elaborated scenarios during preschool and kindergarten. These complex scenarios include role coordination and provide performative and verbal interaction among peers (Berk & Meyers, 2013; Bodrova et al., 2013).

Forms of play in which children pretend to mimic certain behaviors refer to symbolic play, imaginary play, pretend or make-believe play, and SD play. Although these terms are used interchangeably (Göncü, 2019; Whitebread & O'Sullivan, 2012), their meanings might vary depending on the circumstance in which they are used. Smilansky (1968) defines SD play as a type of preschoolers' voluntary social play activity characterized by various criteria. These criteria are generally the child's pretending concerning a role, object, or situation for at least 10 minutes. However, for a play to be considered SD, at least two children are verbal interactions and generally exhibit representational or make-believe actions concerning elaborated play episodes (Smilansky, 1968). In the present study, which concentrates upon the association between SD play complexity levels and SR skills, SD play is perceived as defined by Smilansky.

Self-Regulation Skills in Early Childhood

SR is widely defined as the skill of an individual to control and subsequently regulate their thoughts, feelings, and behaviors for self-purposes (McClelland et al., 2010; Vohs & Baumeister, 2004). Studies show that SR skills are essential to school readiness by supporting young children's success in both academic and social domains (Willoughby et al., 2019) and narrowing the achievement gap in school readiness levels of disadvantaged children (Finders et al., 2021; Fitzpatrick et al., 2014).

Different perspectives examine SR. For example, cognitive and neuropsychology researchers focus on cognitive processes called executive functions (EF) (Blair, 2016; McClelland et al., 2010). EF are cognitive processes that enable children to regulate their behavior (McClelland & Cameron, 2012; van der Ven et al., 2013). Behaving according to the classroom rules, waiting for a turn to play with the desired toy, completing any task, obeying the rules of the play, and so forth require using EF (Center on the Developing Child at Harvard University, 2014; McClelland & Cameron, 2012). Effective SR involves the coordination of EF (McClelland & Cameron, 2012). Research from cognitive perspective highlights three main EF: (1) attention flexibility (AF), (2) working memory (WM) and, (3) inhibitory control (IC) (Miyake et al., 2000; McClelland & Cameron, 2012).

Although these three EF mechanisms are at least partially independent of each other, research reveals that they work in conjunction with each other in young adults and childhood (Huizinga et al., 2006; Miyake et al., 2000). For instance, Miyake et al. (2000) revealed a three-factor structure as shifting (function of attentional flexibility), updating (function of WM), and inhibition (function of IC) which are moderately related to each other. AF references a person's ability to focus and pay attention to a task voluntarily, to maintain attention even in the presence of distracting stimuli, to shift attention to a different task when necessary, and to adjust behavior according to a new situation (Blair & Diamond, 2008; Blair & Ursache, 2011). WM is remembering and updating information in the learning and implementation process (Gathercole & Pickering, 2000). IC is the ability first to prevent a dominant impulsive tendency due to internal or external factors and then produce a more appropriate alternative response (Diamond, 2013).

Children who can utilize SR skills effectively have high levels of adaptation to educational environments, motivation, involvement in learning, and positive relationships with teachers and peers (McClelland & Tominey, 2015; Veijalainen et al., 2017). In their study, Veijalainen et al. (2017) found significant relationships between the SR skills of preschoolers and different

developmental areas. Children with high SR skills need less support than other children, are more easily adaptive to and flexible within the social environment, have strong social and motor skills, better communication, and learning capacities, and have greater success in peer relations and with early childhood personnel.

Socio-Dramatic Play and Self-Regulation Skills

SR skills can be learned and improved with different strategies (Schmitt et al., 2015; White et al., 2021). One of these strategies for supporting SR is SD play. (Elias & Berk, 2002). By Vygotsky's (1978) sociocultural theory, SR is one of the primary skills that result from SD play. Two critical characteristics of the SD play emphasize the development of self-regulation skills. First, using symbolic objects in imaginary scenes is based on experiences from the sociocultural environment. For example, when a child pretends that a wooden block represents a phone, the real meaning of that object changes, allowing the child to use that object in the play, regardless of the object's natural function. In this context, the creation of imaginary scenes by using symbolic objects allows the child's thoughts to be separated from concrete reality. The child, who begins to use their thoughts rather than the object's natural function, can overcome their impulses and produce alternative actions (Meyers & Berk, 2014).

Second, the child often prefers to behave by the social rules of the role rather than with the tendency to act according to their impulses. An imaginary situation in play is not an incidental reality in a child's life, and this imaginary situation already has rules on how to act. For example, a child imagines herself to be a teacher and acts out this teacher role, or a doll is acted out by the child as a teacher. In such a case, the child adheres to the rules of the teacher role since the feeling of pleasuring the play will be dominant (Vygotsky, 1967). That is, the child adopts implicit rules accepted by self or others regarding the role of the teacher, and thus the child almost always prefers to inhibit immediate impulses (Nicolopoulou, 2019).

Findings indicate that SD play is an important practice that contributes to developing SR skills (Walker et al., 2020; White & Carlson, 2021). SR skills are required, for example, in children acting in the theater-themed SD play process, to remember their roles (such as theater actors, spectators, or technical staff), to act by their roles by controlling their dominant impulses, and to think flexibly in any changing situation. İvrendi (2016a) investigated the effect of play complexity levels on children's SR skills and found that children who participated in the more complex play had greater SR skills.

Children who live in disadvantaged environments and are exposed to inadequate environmental stimuli have trouble exhibiting their attention, behavior control, and cognitive skills (Center on the Developing Child at Harvard University, 2011). It is, therefore, beneficial when caregivers and teachers support SR skills in early childhood (Savina, 2021; Walker et al., 2020).

Considering the research results discussed above, SD play is an essential context for SR skills development in early childhood. This study investigates SD play about the SR skills of five- to six-year-old preschoolers to understand the relationship between these two variables better. Toward this aim, the complexity level of SD play was assessed through play observations, and children's SR skills were assessed with teachers' and mothers' reports with the following questions in mind:

1. Do teacher-reported SR skills statistically and significantly relate to the complexity levels of SD play?
2. Do mother-reported SR skills statistically and significantly relate to the complexity levels of SD play?

METHOD/MATERIALS

Research Design

This study was designed as associational research to examine whether SR skills based on teachers' and mothers' views relate to SD play's aspects and complexity levels. In this research, SR skills based on teachers' and mothers' views are dependent variables, and SD play is the independent variable.

The Setting and Research Participants

The research occurred in seven classrooms in two public preschools in Izmir, Turkey. In the classrooms, there was one teacher and a trainee who was studying in the child development department of a vocational high school. All classrooms had learning centers such as dramatic play centers, block centers, and book centers. Learning centers are playgrounds with different materials prepared for children for free play in the classroom (Ministry of National Education, 2013). The participants consisted of typically developing children, their mothers, and teachers. The number of teacher-assessed participants was 51 preschoolers, while the number of mother-assessed participants was 48 preschoolers, as three children's mother reports of SR skills were missing.

Ages varied from 60 to 86 months (M= 68.75, SD=5.38) for the 51 preschoolers (37 girls) participating in the study. Almost half of the parents had a high school diploma, and 64.7 % of the families' average monthly income was 3104 TL (around US $516). This average monthly income was below the poverty threshold for a family of four in Turkey (Turkish Statistical Institute, 2020). Regarding preschool attendance, 72.5 % attended preschool for one year, while 27.5 % attended for two years or more.

Data Collection

The Self-Regulation Skills Scale (SRS)-Teacher Form (İvrendi & Erol, 2018)

SRS-Teacher Form was utilized to measure children's SR skills based on teachers' views. This scale is a five-point Likert scale with 22 items measuring IC (eight items), e.g., solves problems by talking to friends., attention (nine items), e.g., endeavors to fulfill a task that she has started without someone's direction., WM (five items), e.g., recollects what learned. The range of possible scores is 8-40 for IC, 9-45 for attention, and 5-25 for WM. For content validity, the 42-item form was sent to six experts (two preschool teachers with master's degrees and four field experts) to get expert opinions. Experts evaluated the items regarding appropriateness and clarity criteria and their appropriateness for the sub-dimension in which they were included. In addition, experts rated each item as "appropriate", "partially appropriate", and "not appropriate", considering the Lawshe analysis method. As to this rating, it was established that the content validity index (CVI) was 0.95. In line with the experts' opinions, adjustments were made to the items, and the form was finalized. The confirmatory factor analysis (CFA) values met the proposed criteria ($\chi 2/sd$ = 1.28, RMSEA=.046, SRMR=.068, CFI=.99). The internal consistency coefficient with Cronbach's Alpha was .94 for the total scale, .91 for the attention, .87 for the WM, and .91 for the IC. The test-retest reliability was .81 (İvrendi & Erol, 2018). In the present study, the internal consistency with Cronbach's Alpha was .96 for the total, .96 for attention, .95 for WM, and .95 for IC.

The Self-Regulation Skills Scale (SRS)-Mother Form (Erol & İvrendi, 2018)

SRS-Mother Form was utilized to measure children's SR skills based on mothers' views. This form is a five-point Likert-type scale with 20 items (six items for attention, e.g., maintains an activity to the end, five items for WM, e.g., recollects where put belongings., five items for IC-emotion, e.g., tells the causes and effects of others' emotions., five items for IC-behavior, e.g., uses different ways to control her anger). The range of possible scores is 6-30 for attention, 5-25 for WM, 5-25 for IC-emotion, and 4-20 for IC-behavior. This scale's content validity process and the index were the same as the teacher form. The CFA values met the proposed criteria ($\chi 2/sd$ = 1.91, RMSEA=.07, SRMR=.07, CFI=.91). The Cronbach's Alpha values of this form were .90 for the full scale, .89 for the attention, .82 for the WM, .77 for the IC-emotion, and .75 for the IC-behavior. The test-retest reliability was .77 (Erol & İvrendi, 2018). In the present study, the internal consistency with Cronbach's Alpha was .87 for the total scale, .71 for attention, .68 for WM, .77 for IC-emotion, and .61 for IC-behavior.

The Socio-Dramatic Play Scale (SDPS) (Hanline et al., 2008)

Karaman (2012) adapted this scale into Turkish to measure the complexity of SD play. It is an observation-based assessment tool consisting of three aspects: Symbolic agent, symbolic substitution, and symbolic complexity. Each aspect has four different levels, from low to high. The symbolic agent is about what or to whom the child directs the SD play. As the level of playing in the symbolic agent increases, the child's actions in the SD play move toward objects and peers rather than centering on the self. Symbolic substitution relates to the tangibility or abstractness of the objects used in SD play. Symbolic complexity includes the number of schemes created in the SD play and the interrelatedness of these schemes (Hanline et al., 2008). Table 1 was formed by reference to Hanline et al. (2008) and, Karaman and İvrendi (2015).

Table 1. Illustrative examples of SD play scale's aspects

Score	SA	SS	SC
Level 1	Pretending to eat pizza.	Using a real hair comb to comb a doll's hair.	Pretending to toast.
Level 2	Pretending to make a doll sleep.	Using a plastic stethoscope to examine a patient.	Pretending to feed their cat and then walks their dog
Level 3	Pretending to be a doctor.	Using little blocks instead of money.	Pretending to go to the restaurant with their peers, have dinner, and come back home.
Level 4	Directs another peer to be daddy to the child in the play.	Pretending to be police and speaking their imaginary police radio.	Pretending to take their doll off to the coiffeur, portrays a hairdresser, and cuts the doll's hair as their customer, then returns to the mommy role and goes home with their child.

Note: SA: Symbolic agent; SS: Symbolic substitution; SC: Symbolic complexity

Karaman and İvrendi (2015) found a statistically significant positive correlation between the symbolic agent ($r=0.76$; $p<0.01$), symbolic substitution ($r= 0.79$; $p<0.01$), and symbolic complexity ($r=0.71$; $p<0.01$) scores using Kendall's tau-b correlation coefficient. The correlation between test-retest scores was examined with the Spearman correlation coefficient. The correlation between the test-retest scores of the symbolic agent ($r=0.70$, $p<0.01$), symbolic substitution ($r=0.77$; $p<0.01$), and symbolic complexity ($r=0.69$; $p<0.01$) was statistically significant (Karaman & İvrendi, 2015).

Procedure

After obtaining the necessary permissions, the participants were determined on a voluntary basis. The study was conducted with the children whose parental consent was obtained. Participating teachers and mothers of the children completed the SRS forms. In the current study, following the guidelines developed by Hanline et al. (2008), a fourth-year undergraduate preschool education program student (observer) assisted the lead researcher with video recordings and independently watched and coded 25% of the videos in this study for intercoder reliability.

A seven-hour observer training consisting of theoretical explanations and examples of SD play was provided for the observer. Also, the observer read the books and articles suggested by the researcher to understand the SD play better. The observer observed the researcher during the first two days of video recording and started video recording the next day. The researcher explained the coding to the observer, watched, and coded this video record together. Then, each independently coded a SD play session to evaluate whether the observer was coding correctly. After the researcher confirmed that the observer did similar coding to the researcher (e.g., the observer and the researcher coded one minute in the video recording to the same aspect and level in the SDPS), the Kappa fit indexes were calculated (κ=.85). This fit index indicates that the interobserver agreement is at the desired level (Fraenkel et al., 2012).

Video recordings focused on the children engaged in SD play during their daily free play time. Therefore, the researcher and the observer focused on children playing socio-dramatic plays in dramatic play or block centers. The study did not include children who did not play socio-dramatic play. Video-recorded children's SD play sessions included the following criteria: imitative behavior, pretending concerning actions and situations, substituted objects, and interactions between at least two players in the framework of the play episode. It was also considered that the SD play scene should last at least 10 minutes. Recordings averaged 35 minutes per session, with sessions occurring three to five days a week for six weeks. The SD play was not interfered with during the sessions. Before video recordings, the researchers spent time getting acquainted with the children. The initial few minutes of each session were not recorded to allow the children to adapt to SD play. For each session, video recording concentrates on one participant, even if multiple participants play together. Thus, in the coding process, only one participant was coded for each session. Each participant has an equal number of sessions. Each minute of the 30 minutes of recordings was evaluated using a scale of 4 levels, with each minute recorded as one data point. Each child was placed in a group based on the most complex behavior.

When the data distribution was evaluated about the scale levels, it was found that no children were at the 1st level in the symbolic substitution, but there were instances in which children were at the 2nd level. Therefore, the level 1 and level 2 scales were merged into one group which represented the low, while level 3 represented the medium, and level 4 represented the high level. Levels 1 and 2 were scored as 1 point, level 3 as 2 points, and level 4 as 3 points. Each observed level was recorded, and then in each minute of the recordings, the levels that children reached to the highest observed levels of a symbolic agent, symbolic substitution, and symbolic complexity were scored.

Data Analysis

The Kolmogorov-Smirnov test for normality was conducted for the dependent variable data. The Z scores of the teacher-reported SR skills showed that the data of the IC and attention showed normal distribution (Z= .12; .11; p>.05), while the data of the WM did not demonstrate (Z= .17; p<.05). The Z scores of mother-reported SR skills demonstrated that the data of the attention and IC-behavior showed normal distribution (Z= .12; .11; p>.05), while the data of the WM and IC-emotion did not show (Z= .21; .15; p<.05). One-way analysis of variance (One-Way ANOVA) and Tukey HSD, one-way analysis of covariance (One-Way ANCOVA) with Bonferroni-adjusted post hoc test, Pearson's product-moment correlation coefficient (PPMCC) were utilized for normally distributed data. The Kruskal Wallis-H test (K-W Test) and Mann-Whitney U test (MW-U Test) were used for data that did not show normal distribution. SR skills based on teachers' and mothers' views are dependent variables, and SD play is the independent variable in this study.

FINDINGS

The mean scores and standard deviation of teacher-reported and mother-reported SR skills are given in Table 2.

Table 2. Mean scores and standard deviations of dependent variables

Reported self-regulation skills	Dependent variables	*n*	$\bar{x}$	*sd*
Teacher-reported SR skills	SR-IC	51	3.57	.82
	SR-A	51	3.69	.75
	SR-WM	51	4.38	.62
Mother-reported SR skills	SR-A	48	4.04	.59
	SR-WM	48	4.66	.39

	SR-IC/E	48	4.08	.66
	SR-IC/B	48	3.57	.74

Note: 1SR-IC: Self-Regulation-Inhibitory Control; SR-A: Self-Regulation-Attention; SR-WM: Self-Regulation-Working Memory; SR-IC/E: Self-Regulation-Inhibitory Control/Emotion; SR-IC/B: Self-Regulation-Inhibitory Control/Behavior

Findings Related to Research Question 1

Do Teacher-Reported SR Skills Statistically and Significantly Relate to the Complexity Levels of Socio-Dramatic Play?

A one-way ANOVA was computed to examine the relationship between the aspects of SD play and teacher-reported SR skills (IC and attention). The results are shown in Table 3.

Table 3. One-way ANOVA results of teacher-reported SR skills and aspects of SD play

Aspects of socio-dramatic play			Sum of squares	df	Mean square	*F*	*p*
SA	SR-IC	Between groups	.33	2	.17	.24	.78
		Within groups	33.54	48	.69		
		Total	33.88	50			
	SR-A	Between groups	2.18	2	1.09	1.98	.14
		Within groups	26.32	48	.54		
		Total	28.50	50			
SS	SR-IC	Between groups	.53	2	.26	.38	.68
		Within groups	33.34	48	.69		
		Total	33.88	50			
	SR-A	Between groups	.25	2	.12	.21	.80
		Within groups	28.24	48	.58		
		Total	28.50	50			
SC	SR-IC	Between groups	5.00	2	2.50	4.15*	.02
		Within groups	28.88	48	.60		
		Total	33.88	50			
	SR-A	Between groups	5.46	2	2.73	5.69**	.00
		Within groups	23.03	48	.48		
		Total	28.50	50			

Note: N=51, *=p<.05, **p=<.01; SA: Symbolic agent; SS: Symbolic substitution; SC: Symbolic complexity; SR-IC: Self-Regulation-Inhibitory Control; SR-A: Self-Regulation-Attention

As seen in Table 3, there was a statistically significant difference IC [F (2, 48)= 4.15; p<.05] and attention [F (2, 48)= 5.69; p<.01] dimensions of children's SR skills according to the symbolic complexity. The post hoc multiple comparison test, using Tukey HSD, indicated that the mean scores of children who play at a high level in the symbolic complexity aspect ($\bar{X}$=3.82, SD=.81; $\bar{X}$=3.88, SD=.75) were higher than the mean scores of children who play at a medium level ($\bar{X}$=3.11, SD=.69; $\bar{X}$=3.22, SD=.65), according to the IC and attention dimensions, respectively. However, the symbolic complexity mean scores of children who play at low and high levels were not statistically significantly different.

Two separate one-way analysis of covariance on the data has been conducted to prevent the likelihood that such a difference may have arisen by chance. In the first analysis, since children's age in the sample has a large standard deviation and wide range, age has been used as the concomitant variable, and the IC has been utilized as the dependent variable. Secondly, the monthly income variable has been utilized as the concomitant variable, and IC has been set as the dependent variable. In the current research, there is a statistically significantly low-level relationship between IC and age (r=.36, p<.5), IC and family's monthly income (r=.33, p<.05). Therefore, it seems legitimate to acknowledge the age and family's monthly income as covariates. Table 4 was given two separate one-way ANCOVA results.

Table 4. One-Way ANCOVA results of teacher-reported IC scores (age-corrected and income-corrected) and symbolic complexity

Source of variance	Sum of squares	df	Mean square	*F*	*p*
Child's Age	4.52	1	4.52	8.73	.00
SC	5.26	2	2.63	5.07	.01
Error	24.35	47	.51		
Total	684.26	51			
Monthly Income	2.16	1	2.16	3.80	.057
SC	3.44	2	1.72	3.03	.058

Error	26.72	47	.56
Total	684.26	51	

Note: SC: Symbolic complexity

As given in Table 4 the ANCOVA analysis revealed that significant relationship between IC and symbolic complexity when age was controlled [F (2, 47)= 5.07; p<.05]. That is, controlling for age did not influence this significant difference favoring children playing at a high level. The second analysis results, controlling for the family's monthly income, demonstrated a non-significant relationship between IC and symbolic complexity [F (2, 47)= 3.03; p=.058]. However, it is possible to say that this value is close to the 95% confidence interval. In addition, multiple post hoc comparisons favoring children playing at a high level did not change. That is, there is a 94.2% chance that the difference between the two levels would not occur by chance.

The relationship between aspects of SD play and teacher-reported SR abilities (WM) was examined using the K-W Test. Findings indicated that the WM dimension of SR skills was not related to the SD play aspects.

Findings Related to Research Question 2

Research Question 2: Do Mother-Reported SR Skills Statistically and Significantly Relate to the Complexity Levels of Socio-Dramatic Play?

Another one-way ANOVA was computed to examine the relationship between aspects of SD play, attention, and IC-behavior dimensions of mother-reported SR skills and presented in Table 5.

Table 5. One-Way ANOVA results of mother-reported SR skills and aspects of SD play

Aspects of socio-dramatic play			Sum of squares	*df*	Mean square	*F*	*p*
SA	SR-A	Between groups	.08	2	.04	.11	.88
		Within groups	16.51	45	.36		
		Total	16.60	47			
	SR-IC/B	Between groups	.15	2	.07	.13	.87
		Within groups	25.96	45	.57		
		Total	26.12	47			
SS	SR-A	Between groups	.07	2	.03	.09	.90
		Within groups	16.53	45	.36		
		Total	16.60	47			
	SR-IC/B	Between groups	1.70	2	.85	1.57	.21
		Within groups	24.41	45	.54		
		Total	26.12	47			
SC	SR-A	Between groups	1.17	2	.58	1.71	.19
		Within groups	15.43	45	.34		
		Total	16.60	47			
	SR-IC/B	Between groups	3.42	2	1.71	3.39*	.04
		Within groups	22.69	45	.50		
		Total	26.12	47			

Note: N=48; *=p<.05; SA: Symbolic agent; SS: Symbolic substitution; SC: Symbolic complexity; SR-A: Self-Regulation-Attention; SR-IC/B: Self-Regulation-Inhibitory Control/Behavior

Table 5 demonstrates that the IC-behavior dimension of children's SR skills held a statistically significant difference for symbolic complexity [F (2, 45)= 3.39; p<.05]. A post hoc multiple comparison test using Tukey HSD showed that the mean scores of children who played at a high level in the symbolic complexity aspect ($\bar{X}$=3.71, SD=.47) were higher than the mean scores of children who played at a low level ($\bar{X}$=2.87, SD=.74), according to the IC-behavior dimension.

The K-W Test was conducted to examine the impact of the aspects of SD play on WM and the IC-emotion dimensions of mother-reported SR skills and presented in Table 6.

Table 6. The K-W test results of mother-reported SR skills and aspects of SD play

Aspects of socio-dramatic play		Groups	*n*	Mean rank	*df*	χ^2	*p*
SA	SR-WM	LL	5	23.50	2	.04	.97
		ML	28	24.79			
		HL	15	24.30			
	SR-IC/E	LL	5	29.90	2	1.71	.42
		ML	28	25.32			
		HL	15	21.17			

SS	SR-WM	LL	2	32.50	2	1.12	.56
		ML	19	22.66			
		HL	27	25.20			
	SR-IC/E	LL	2	18.25	2	1.25	.53
		ML	19	27.00			
		HL	27	23.20			
SC	SR-WM	LL	6	15.75	2	2.90	.23
		ML	17	25.29			
		HL	25	26.06			
	SR-IC/E	LL	6	11.83	2	5.90*	.05
		ML	17	25.09			
		HL	25	27.14			

Note: *=p=.05; SA: Symbolic agent; SS: Symbolic substitution; SC: Symbolic complexity; SR-WM: Self-Regulation-Working Memory; SR-IC/E: Self-Regulation-Inhibitory Control/Emotion; LL: Low level; ML: Mid-level; HL: High level

Based on Table 6, a statistically significant difference was present for the IC-emotion dimension of children's SR skills according to symbolic complexity [$\chi^2(2)= 5.90$; p=.05)]. Possible pairs of all play levels were compared using the MW-U test to determine which groups were significantly different. The findings showed that the difference between low and mid-level was statistically significant in favor of children who played at the mid-level. Also, a statistically significant difference was present in favor of children who played at a mid-level of the symbolic complexity aspect according to the IC-emotion dimension of SR skills based on mothers' views (U=23.5, p=0.05). The difference between low and high levels was statistically significant in favor of children playing at high levels of symbolic complexity regarding the IC-emotion dimension of mother-reported SR skills (U=26.5, p<0.05). These findings demonstrate that children who played at mid and high levels of the symbolic complexity aspect have better IC-emotional skills than children who played at low levels.

PPMCC was computed to compare teacher-reported and mother-reported SR skills. Results revealed no statistically significant correlation among the two informants' reported SR skills.

DISCUSSION

Examining the teachers' views, the IC and attention dimensions of SR skills statistically significantly differed in favor of the children who played a high level of symbolic complexity. Moreover, IC showed statistically significant differences even when controlling for children's age. However, the WM did not differ significantly according to symbolic complexity. Similarly, the attention and WM dimensions of mother-reported SR skills did not differ significantly regarding symbolic complexity. The emotion and behavior sub-dimensions of IC differed significantly in favor of children who played at high levels of symbolic complexity. Additionally, teacher and mother-reported attention, WM, and IC dimensions did not relate to symbolic agent and symbolic substitution aspects.

The increased level of playing in the symbolic agent aspect requires the child to interact verbally or performative with peers or objects in SD play. Therefore, the child's actions move toward objects and peers. In their study, Pierrucci et al. (2014) reported that pretense propensity (e.g., a person other than self) was not associated with any SR skills, consistent with the findings of this study. In another study, Thibodeau et al. (2016) showed that pretend play supported children's WM and attention performance. However, this experimental study indicated that pretend play did not reveal a significant difference in IC performance, similar to these findings. This finding is also incongruent with White et al.'s (2021) study. This inconsistency may result from various reasons, such as individual (Taylor & Carlson, 1997) and cultural differences (İvrendi et al., 2019). For instance, Taylor and Carlson (1997) examined the relationship between mental ability and pretense. They concluded that each pretense assessment was related to the theory of mind performance in young children. Similarly, İvrendi et al. (2019) examined the play perceptions of Turkish and Norwegian children, teachers, and mothers' and noted that many Norwegian teachers observed children using dramatic materials, while Turkish teachers observed a preference by Turkish children to play with blocks. Consistent with İvrendi et al.'s (2019) study, our informal observations during data collection also revealed that the children who did not participate in SD play mostly preferred to play with blocks.

Another finding of this study was that attention, WM, and IC dimensions based on teachers' and mothers' views did not significantly differ from the symbolic substitution aspect of SD play. The relationship between the object and the meaning begins to separate from each other as the level of symbolic substitution, based on the tangibility or abstractness of the objects used in the play, increases. As Vygotsky (1978) states, children utilize their SR skills by attributing meanings to objects that shift from concrete to abstract. While this finding is inconsistent with the findings of some studies examining the relationship between symbolic substitution and SR skills (Carlson et al., 2014; Nader-Grosbois & Vieillevoye, 2012; Slot et al., 2017), it is consistent with other studies (Bijvoet-van den Berg & Hoicka, 2019; Hopkins et al., 2016). Bijvoet-van den Berg and Hoicka (2019) reported no relationship between symbolic substitution and IC, while Slot et al. (2017) revealed that object substitution, one of the indicators

of the quality of SD play, and cognitive SR correlated with each other. One possible reason for this discrepancy is that the level of SD play may not have developed enough to adequately address the portrayed character's perspective on life. This situation may have caused children to pretend at an immature level and the meanings attributed to the objects to remain more concrete, resulting in children playing at low levels in the symbolic agent and symbolic substitution dimensions.

Robertson (2016) examined the complexity of children's SD play behaviors and found that roughly two-thirds of the children participating in the study showed a complexity level of SD play that was at an immature level. These children exhibited short-term and repetitive play scenes that did not include enough organized play schemas, thereby producing immature role enactment and mid-level symbolic substitution with objects in their SD play.

Another finding of this study showed that teacher-reported attention and IC dimensions differed in favor of children who demonstrated a higher level of symbolic complexity in their play. This finding demonstrates that children who exhibit a high level of symbolic complexity in their play may have better IC and attention skills than those who play at a mid-level. It is important to note the difference between IC and in favor of children who demonstrated a higher level of symbolic complexity in their play held up in our study even after accounting for children's age and family's monthly income controls separately. Some studies have shown that SR skills are linked to a child's age. For example, Wanless et al. (2016) revealed rapid growth in acquiring SR skills after age five. In addition, because the children's age range was wide and the standard deviation was large in this sample, controlling for the child's age was needed. Particularly, controlling for the family's monthly income was crucial as the chronic ecological stress factors related to low income have a negative effect on children's SR skills (Raver, 2012). At the same time, when the same dimensions of mother-reported SR skills were examined, emotion and behavior IC skills differed in favor of children who played at a high level of symbolic complexity.

This finding demonstrated that children who played at a high level might have greater IC-behavior skills than their peers who played at a low level. These findings are consistent with other studies examining the relationship between IC skills and SD play (Slot et al., 2017; Thibodeau-Nielsen, Gilpin, Palermo, et al., 2020; White et al., 2021). Thibodeau et al. (2016) found that pretend play supports AF performance. Carlson et al. (2014) argue that children's SR skills play an effective role in the capacity of representational thinking and that the main factor in pretending may be the IC skill. White et al. (2021) investigated the effect of pretend play on IC, revealing that only social pretend play was a predictor of IC. This result is also consistent with the findings of this study.

When the relevant literature is examined, various findings show that increasing the levels of play supports SR skills (Bauer & Gilpin, 2022; Elias & Berk, 2002; İvrendi, 2016a). In their study, Slot et al. (2017) stated that high-level pretend play enables children to use their SR skills continuously. In another study, Bauer and Gilpin (2022) reported that the children with the complex level pretended, according to all three informants (child, teacher, and observers), also had the highest cognitive and social skills. As Vygotsky (1978) stated, complex scenarios enhance the use of SR skills. In the complex multi-level SD play, children make more plans about the roles and processes (Bodrova et al., 2013). Children use more symbolic or imaginary objects and exhibit a greater capacity for role-playing and pretend-talk. Thus, the study findings support the premise that the level of play in the symbolic agent and symbolic substitution dimensions relates to symbolic complexity.

Finally, this study did not find an association between teacher and mother ratings of SR. However, limited research comparing these two informants (parents and teachers) found a low correlation between parent-reported and teacher-reported SR skills (İvrendi et al., 2021; Zulauf-McCurdy & Loomis, 2022). The inconsistency may be due to emotionally biased reports of mothers and teachers' more objective observation of children. In addition, given their extensive developmental perspectives, teachers may have reported more objectively.

CONCLUSION, LIMITATIONS, AND FUTURE RESEARCH

Although the results of this research provided evidence as to the association between SD play and SR skills, it has limitations. First, this research is descriptive and does not present causal relationships between children's SR skills and SD play. Although empirical evidence from intervention studies suggests that SD play supports preschoolers' SR skills, these studies are limited (Thibodeau et al., 2016). Also, interventions administered in previous research have generally been implemented by experimenters. Future interventions can be implemented by preschool teachers based on teacher training for such interventions' continuity in children's naturalistic environments. In addition, future studies can be designed longitudinally to investigate potential long-term longitudinal relations between SD play and SR skills.

Second, this research was conducted with a small sample of children due to children's absenteeism and not participating in SD play. The sample is also limited to two preschools. Future research on the subject can be conducted with a larger group and include more preschools, to enhance the generalizability of this research's findings.

Finally, this study used indirect measures to assess children's SR skills. Future research may use direct measures of SR skills and employ more advanced statistical analysis techniques.

It is needed to understand better why there is no significant difference in other subdimensions of SR skills compared to aspects of SD play. Research highlights that factors (e.g., adult support, language skills, baseline SR levels) can affect whether children participate in SD play (Carlson & White, 2013; Thibodeau-Nielsen, Gilpin, Nancarrow, et al., 2020).

For example, Gmitrova (2013) found that direct participation by early childhood teachers in pretend play was more effective in developing pretend play than indirect involvement. Since advanced play is highly effective in supporting children's developmental areas and SR skills, adequate adult support may be crucial during SD play, one of the young children's most preferred types of play (Cevher-Kalburan & İvrendi, 2021). In addition, teacher-child interactions during SD play, how the teacher participates in the play, and the teacher's introduction of social roles to children are considerable. The current study focused only on the relationship between SD play and SR skills. Other studies may incorporate these factors into research to better understand the effects of SD play on SR skills or the relationship between two variables. Also, upcoming studies can be conducted only with children who play at a high level of SD play to determine the association of SD play with SR skills.

The research on SR skills and symbolic substitution appears to be limited. Considering that using symbolic or imaginary objects improves the child's metacognition, this issue can be addressed in future research. Likewise, experimental studies can be carried out to examine the effect of SD play-based intervention programs on SR skills. Research may provide evidence as to cause-effect relationships between the two variables. Based on the findings of this and previous studies, SD play relates to SR skills and should be fostered in early childhood institutions. Teachers should be supported through professional development activities that foster high levels of SD play in the classroom.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Statements of publication ethics

We hereby declare that the study has not unethical issues and that research and publication ethics have been observed carefully. This research was conducted in compliance with all principles of the Ethical Committee of Pamukkale University. This research was conducted with approval from the Provincial Directorate of National Education.

Researchers’ contribution rate

First Author: Conceptualizing, Methodology, Data Collecting, Analysis and Interpretation of Data, and Writing-Original Draft

Second Author: Writing-Review, Supervision, and Editing

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