Classroom Context Matters: Observing Dual Language Learners Self-Regulation Skills

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This study examined the association between self-regulation skills and classroom context in a sample of Spanish-English speaking Dual Language Learners (DLLs) from low-income homes. Considering the national focus on improving early education for DLLs, it is important to examine the measurement of developmental skills, like self-regulation, that contribute to later success.

Objectives

The current study:

(1) Explored the relation between direct and observed assessments of DLL's self-regulation skills. This objective was exploratory due to mixed findings from previous research (Brock et al., 2009; Halle et al., 2014; Ponitz et al., 2009).

(2) investigated the impact of classroom context on the use of self-regulation skills. It was hypothesized that DLLs would demonstrate higher self-regulation skills in small group compared to whole group (Bustamante et al., 2018; Rimm-Kaufman et al., 2005), academic instruction and play-like instruction compared to transitions (McWilliam et al., 2003; Pianta et al., 2002; Vitiello et al., 2012), and when the teacher is interacting compared to when the teacher is not interacting with children (Rimm-Kaufman et al., 2005).

Method

Setting and Participants

The sample included 341 Spanish-English DLLs, between 37 and 63 months (M=49.79, SD=6.81), from 37 classrooms in 9 Head Start centers. Roughly half of the children were female (48.97%). A subsample of 55 children were included in the observation of self-regulation skills.

They were between 39 and 61 months (M=47.96, SD=6.71), about half were female (45.45%), and all were Spanish-English DLLs.

Procedure and Measures

Direct assessment of self-regulation. The Preschool Self-Regulation Assessment (PSRA) (Smith-Donald et al., 2007) directly assesses children's self-regulation skills. It consists of several age-appropriate tasks designed to assess self-regulation (see Table 1).

Observation of context and self-regulation. The Social Development Lab-Kindergarten Coding System (SDL-K) is a 20-minute observational coding system that measures children's behaviors and exposure to learning contexts in the classroom (see Table 2; Rimm-Kaufman, 2005).

Results

To examine the association between self-regulation measures, a two-factor measurement model for the PSRA and a composite score for SDL-K was incorporated into a Structural Equation Model; $\chi^2(12, N=341)=23.923$, $p<.05$, RMSEA estimate=0.054, 95% CI[0.020, 0.085]; CFI=0.954, SRMR=0.065. Factor 1, Cool Executive Control (CEC) was not associated with Observed Self-Regulation (b=-0.102, SE=.266, p=.703). Factor 2, Hot Executive Control (HEC) was also not associated with Observed Self-Regulation (b=-0.085, SE=.228, p=.709).

To examine if children's SDL-K scores differed in classroom contexts a series of linear mixed effects models were conducted, where self-regulation scores by minute were nested within each child. 45.1% of the variance in self-regulation scores was attributed to the child. Self-regulation was higher in small group compared to whole group (F=18.85, $p<.001$, b=-.307, SE=.071, $p<.001$). Children's self-regulation skills were higher in play-like Instruction compared to Transitions (F=43.992, $p<.001$, b=0.474, SE=0.071, $p<.001$); lower in transitions compared to

academic instruction (b=0.199, SE=.075, p<.01); and higher in play-like instruction than academic nstruction (b=-0.672, SE=0.075, p<.001). Children's self-regulation skills were higher when the teacher was interacting with them versus when the teacher was not (F=11.578, p<.001; b=0.243, SE=.071, p<.001).

Discussion

The lack of association between the self-regulation measures may be due to several factors, including the small sample size of children with observed self-regulation. Additionally, when different measurement tools are used to assess a construct, there may be limited agreement between measures (Winsler & Wallace, 2002). Lack of association was likely due to a combination of factors, some of which were not explored in this study, including (a) differences in the rating of self-regulation across the measures (i.e., PSRA measures CEC and HEC and the SDL-K measures overall self-regulation), (b) contextual differences in the measures (i.e., PSRA requires children to respond to structured prompts, but SDL-K makes no specific demands on behavior), and (c) the influence of other environmental variables (i.e., PSRA occurs in a quiet room and SDL-K occurs in the classroom).

The classroom contexts may be a point of leverage for influencing behavior (Brock et al., 2014). DLL children's self-regulation skills were higher in small group compared to whole group. Teachers may spend more time reinforcing and managing children's behaviors in small group. Previous research examining group size has demonstrated that the average quality of instruction during whole group was low (Bustamante et al., 2018), which may influence self-regulation skills. Children may self-regulate better in small group because they have more time to interact with others, work on specific tasks, and spend less time sitting and watching the teacher.

DLL's self-regulation skills were higher in play-like instruction compared to transitions and academic instruction. Teachers may have more opportunities to elaborate on learning in play-like instructional contexts and give children more autonomy (McWilliam et al., 2003). Increased autonomy could be associated with more child-directed behavior and fewer behavioral demands, making it easier to self-regulate. While transitions are a necessary part of preschool (e.g., handwashing), they were the context where self-regulation was the lowest, potentially because they are one of the most challenging contexts for children's behavior (Vitiello et al., 2012). During transitions, teachers may be able to help children by setting clear behavioral expectations, providing engaging activities, and reducing time spent in transitions.

Finally, teacher proximity increased DLL's self-regulation skills. When teachers interact with children, they can provide specific feedback on behavior, which may help them increase self-regulation.

Limitations and Conclusion

This study has several limitations. The observation tool does not parse apart observable CEC and HEC behaviors, possibly conflating the ability to detect a relation between directly assessed and observed self-regulation. Future studies should consider ways to observe behaviors directly related to CEC versus HEC.

This study did not explore the nuances of classroom contexts, and instead, dichotomizes contexts into groups. Specific characteristics of each context (i.e., during small group time, it was unclear what activity was occurring), not explored in this study, may contribute to children's self-regulation skills.

In conclusion, this study provides insights into the relation between two different measures of DLL's self-regulation skills and classroom context. Better understanding the impact

of classroom context on DLL's self-regulation skills contributes to the goal of early education programs seeking to identify ways to improve educational experiences of DLLs.

Table 1. Tasks of the Preschool Self-Regulation Assessment

Factor	Task Title	Assessor Directions/Procedure	Scoring Method
Cool Executive Control	Balance Beam (3 trials)	Ask child to walk on a short length of tape for three trials; reduce speed for second trial and slower for third trial.	Subtract first trial from mean of second and third trials (amount of reduction of speed)
	Pencil Tap (16 trials)	Ask child to tap pencil after assessor, assessor taps 1x child should tap 2x; assessor taps 2x child should tap 1x.	Percentage of trials correct
Hot Executive Control	Gift Wrap	Ask child not to peek while assessor wraps a toy in tissue/and bag for 1	Latency to first peek
	Snack Delay (4 trials)	Ask child to wait before getting a candy from under a cup for three rounds (10, 20, 30, 60 s).	Average of four trials on the level of waiting (ranging from does not touch cup or timer to eats candy)

Note. Adapted from Smith-Donald et al. (2007); factor structure from confirmatory factor analyses Basset et al. (2012)

Table 2. SDL-K Coding System

Dimension	Coding scheme	Scales Coded
Classroom Context	Each context within its group is dichotomus and is coded once per minute for 10 minutes block and then repeated for another 10 minute block	Group size: 1 = whole group (i.e., 9 or more children involved in the activity); 2 = small group (i.e., eight or fewer children involved in the activity).
		Focus of Instruction: 1 = Academic Instruction, 2 = Play-like Instruction, 3 = Transitions.
		Teacher proximity: 1 = teacher was present and interacting with the children (e.g., the teacher is involved in reading books with children), 2 = teacher was not present and interacting (e.g., the child was playing with magnet blocks with their peer).
Child Behaviors	For each minute of the observation the observer-rated child behaviors from 1 to 7 (7 indicating high evidence or frequency of behavior)	Self-reliance: children's ability to be self-directed, take charge of their learning, tolerate frustration when working on a task, and manage their responsibilities
		Attention: children's ability to show intense focus on a task and show little distraction to other events in the classroom
		Engagement: children's ability to show visible enthusiasm, concentration, and focus on classroom activities

Table 3. *Means and Standard Deviations for Observed Self-Regulation as a Function of Classroom Context*

	Observed Self-Regulation Composite	
Classroom Context	*M*	*SD*
Small Group	4.921	0.988
Whole Group	4.368	1.069
Teacher Present and Interacting	5.007	1.137
Teacher Not Present or Interacting	4.228	0.934
Academic Instruction	4.808	1.035
Play-like Instruction	5.418	0.753
Transitions	4.067	1.033

Table 4. *Type III Analysis of Variance Tables with Satterthwaite's Method*

Group Size Model	Sum of Squares	*df* Effect	*df* Error	*F*	*p*
Age	0.125	1	51.04	0.227	0.635
Gender	1.066	1	50.86	1.928	0.171
Dominant Language	0.886	1	50.8	1.604	0.211
Group Size	10.415	1	1084	18.848	< .001

Focus of Instruction Model	Sum of Squares	*df* Effect	*df* Error	*F*	*p*
Age	0.053	1	50.65	0.101	0.752
Gender	1.028	1	50.43	1.965	0.167
Dominant Language	1.308	1	50.15	2.499	0.12
Focus of Instruction	46.031	2	1081.75	43.992	< .001

Teacher Proximity Model	Sum of Squares	*df* Effect	*df* Error	*F*	*p*
Age	0.167	1	50.35	0.301	0.586
Gender	1.497	1	51.25	2.694	0.107
Dominant Language	0.789	1	50.26	1.419	0.239
Teacher Proximity	6.431	1	1083.45	11.578	< .001

Table 5. *Least Square Means Table for nested ANOVAs*

Group Comparison	*β*	*SE*	*df*	*t*	*p*
Whole Group - Small Group	-0.307	0.071	1084	-4.341	<.001
Academic - Play-like Instruction	-0.672	0.075	1082	-8.948	<.001
Academic Instruction - Transitions	0.199	0.075	1081	2.626	<.01
Play-like Instruction - Transitions	0.474	0.071	1081	6.653	<.001
Teacher Present - Teacher Not Present	0.243	0.071	1083	3.401	<.001