

Academic Achievement and Perceived Peer Support among Turkish Students: Gender and Preschool Education Impact

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Abstract

This study was conducted to investigate the academic achievement and perceived peer support levels of 4th-8th grade Turkish elementary and middle school students at low socio-economic status. Factorial design analyses were used to test the statistical effects of gender and preschool education variables on the dependent variables. The findings indicated that while girls performed a higher general academic achievement in school courses than boys, the perceived peer support levels were similar for both groups. On the other hand, although no significant effect of preschool education was detected on academic achievement, students who had completed preschool education were found to have significantly higher perceived peer support scores than their peers. Similar to findings of studies from non-Western contexts, no significant relationship was found between the Turkish students' academic achievement and perceived peer support levels.

Keywords: Academic achievement, Perceived peer support, Preschool education, Turkish students.

Introduction

As a dynamic context, the classroom environment significantly impacts students' academic and social progress (Dinsmore & Wenger, 2006; Seifert & Mandzuk, 2006) and students in a classroom need to feel support from people they interact (Ahmed, Minnaert, van der Werf, & Kuyper, 2010; Günindi, 2015; Harwood, Bosacki, & Borcsok, 2010; Lanier, 2007; Patrick, Ryan, & Kaplan, 2007). Interactions of a student may have many dimensions; thus, the perceived support level of a student may depend on various factors (Demaray & Malecki, 2002; Zitzmann, 2005). Among these factors, teacher support and peer support in a classroom usually have the maximum impact on a student's perceived support level at school. It has been well documented that teacher and peer support are positively related to students' positive motivation, academic attitudes, self-efficacy, and academic achievement (Demaray & Malecki, 2002; Ghaith, 2002; Gherasim, Butnaru, & Mairean, 2013; Johnson, Johnson, & Anderson, 1983; Plecha, 2002; Yoleri, 2016). Although both sources of perceived support have significant impact on students, peer support factor is usually underestimated than the teacher support factor. For example, peer interactions

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are many times considered as off-task and disruptive behaviors (Johnson & Johnson, 1985) and therefore are not sufficiently encouraged in classrooms.

The impact of peer support on students' performance and motivation peaks especially during the early adolescence years (Johnson & Johnson, 1985; Moran & Gonyea, 2003; Wentzel & Caldwell, 1997; Zitzmann, 2005). Early adolescence is characterized by a decline in the academic motivation and performance, especially for disadvantaged students (Chen, 2008; Demaray & Malecki, 2002; DeWit, Karioja, & Rye, 2010; Ryan & Patrick, 2001; Wentzel, 1998). During this period, peer acceptance and cooperation with peers are likely to fuel the academic achievement and social skills (Ahmed et al., 2010; Ryan & Patrick, 2001; Wentzel & Caldwell, 1997; Wentzel & McNamara, 1999; Zitzmann, 2005), whereas lack of peer support speeds up the decrease in the motivation and therefore the decrease in the academic achievement (Gherasim et al., 2013; Lanier, 2007; Wentzel, 1991). On the other hand, unlike the findings from developed Western countries, researchers like Chen (2008) and Gherasim et al. (2013), who had conducted their studies in non-Western contexts, concluded that school achievement is independent of the perceived peer support levels.

Preschool Education and Students' Academic and Social Development

In many of the developed countries, although it is not compulsory, preschool education is a part of formal educational system and it is a sign of raising the educational standards (Gormley Jr, 2000; Kamerman, 2000; Wood & Bennett, 1999). According to the 2001 Organisation for Economic Co-operation and Development (OECD) report on the Early Childhood Education and Care, most children living in OECD countries attend early childhood education programs for one or two years before beginning primary school (OECD, 2001). The preschool education is highly encouraged by the central governments since it allows young students adjust to the future school environments and therefore enhance their academic and social skills in the following years (Anders, Grosse, Rossbach, Ebert, & Weinert, 2013; Gorey, 2001; Johnson, 1996; Ladd, Kochenderfer, & Coleman, 1996; Melhuish, Quinn, Sylva, Sammons, Siraj-Blatchford, & Taggart, 2013; Prince, Hare, & Howard, 2001; Temple & Reynolds, 2007; Wentzel & Caldwell, 1997). Also, it is documented that increasing the duration of the preschool education may have an important positive impact on children's cognitive development (Gorey, 2001; Sammons, Elliot, Sylva, Melhuish, Siraj-Blatchford, & Taggart, 2004).

The preschool education programs are also found to have long-term effects going through the middle school and high school years as well (Gorey, 2001; Schweinhart, Montie, Xiang, Barnett, Belfield, & Nores, 2005; Temple & Reynolds, 2007). Barnett (1995), who has reviewed 36 studies on the long-term effects of preschool education, concluded that early childhood education programs can improve students' future school achievement and social adjustment. Likewise, after a meta-analysis study of 35 experimental studies on preschool intervention, Gorey (2001) reported that students with preschool education had higher academic and intellectual achievement, as well as lower social problems, than their peers. However, Gorey (2001) also noted that the achievement difference between the experimental and control groups diminish over time. On the other hand, some researchers also argue that preventing anti-social behaviors and crimes are among the long-term effects of preschool education (Gorey, 2001; Schweinhart et al., 2005; Temple & Reynolds, 2007; Yoshikawa, 1995).

Although it is highly challenging to conduct longitudinal studies in educational settings, a limited number of comprehensive studies were conducted about the long-term impact of preschool education. The longest and maybe the most famous of these studies is the High/Scope Perry Preschool Project, which was conducted in the United States beginning

in 1962 (Schweinhart et al., 2005). The researchers of the project followed 123 low income children starting from three years of age until the age of forty. The participants of the project were randomly assigned to groups, which either had taken quality preschool education or received no preschool education. Researchers collected annual data until their participants got eleven years old and then data were collected at certain years, such as when participants were 15, 19, 27 and 40 years old. Based on the data from about forty years, researchers argued that high-quality preschool programs would contribute to low SES young children in several ways, such as by enhancing their school success and economic performance, and also lowering crime rate in adulthood (Schweinhart et al., 2005).

Another long-term study, The Effective Provision of Pre-school Education (EPPE), was conducted in England between 1997 and 2003 with over 3000 young children between the ages of three and seven (Sammons, Siraj-Blatchford, Sylva, Melhuish, Taggart, & Elliot, 2005). Researchers of the EPPE project collected both quantitative and qualitative data to investigate children's social/behavioral development and concluded that "pre-school can be seen as an effective intervention in relation to policy goals of promoting social inclusion through providing vulnerable groups of young children with high quality pre-school experiences that enable a better start to primary school" (Sammons et al., 2005, p. 222). Similarly, after a study of 367 students until their third grade between the years of 1979 and 1981, Prince et al. (2001) concluded that students with preschool education have significantly higher mathematics, science, and English test scores than their peers.

As many other developing countries, preschool education is recently gaining more support and spreading in Turkey. However, according to the school enrollment statistics, the percentage of 4-5 years old children enrolled in preschool education is still less than 50% by 2015 (Ministry of National Education, 2015). Consistent with the international literature, many Turkish researchers have found that completing preschool education improves both academic and social skills of students and allows students to adapt elementary school easier than their peers (Aslanargun & Tapan, 2011; Elibol-Gültekin, 2008; Erbay, 2008; Işıkoğlu-Erdoğan & Şimşek, 2014; Taner & Başal, 2005; Yoleri & Tanış, 2014). However, these studies on the future impact of preschool education were usually conducted immediately after the preschool programs or at the first grade of the elementary schools. No study was located in the literature focusing on the long-term academic and social outcomes of the preschool education on the Turkish students during the middle school years. Whether or not completing the preschool education has utmost importance for students at low socio-economic status (SES) because it has been reported that students from low SES can perform as high as their peers if they receive high-quality preschool education (Apiwattanalunggarn & Luster, 2005; Erkan, 2011; Melhuish et al., 2013; Sammons et al., 2004; Schweinhart et al., 2005; Sylva, 2014).

What Variables Impact Peer Support?

Researchers investigating the interaction between demographic variables and elementary and/or middle school students' peer support levels report various findings. For example, while some of them concluded that there is no difference in the perceived peer support levels due to gender (Lanier, 2007), others reported that girls tend to receive higher peer support than boys (Gherasim et al., 2013; Malecki & Demaray, 2002; Oelsner, Lippold, & Greenberg, 2011). Along these studies, some researchers reported that the perceived peer support levels of boys and girls depend on the types of academic or social classroom activities (Lanier, 2007; Wentzel & Caldwell, 1997). After a comparison study of elementary students, Zitzmann (2005) found that girls are more influenced by the peer relations compared to boys and concluded that the differences in the interaction ways and types of girls and boys with their peers would be the reason of this difference. On the other

hand, researchers investigating the impact of preschool education on students' future social relations usually reported that students who had participated in preschool programs significantly have stronger social relations with their peers (Barnett, 1992; 1995; Erbay, 2008; Gorey, 2001; Sammons et al., 2005; Schweinhart et al., 2005; Wentzel & Caldwell, 1997; Yoshikawa, 1995).

Having more social experience and thus having better social skills would probably impact the perceived peer support levels of students but it has not been investigated that whether the perceived peer support levels of students depend on their prior participation in preschool programs. Since there is lack of data about the impact of preschool programs on Turkish students' long-term future academic and social development, this study would contribute to the literature by providing data on this topic. The research questions investigated in this study are:

- 1) Do low-SES Turkish students' gender and/or their completion of preschool education impact their average course scores?
- 2) Do low-SES Turkish students' gender and/or their completion of preschool education impact their perceived peer support?
- 3) Is there a significant correlation between the perceived peer support and average course scores of low-SES Turkish students?

Method

Participants

The participants of the main study were 1611 fourth through eighth grade Turkish students (42% girls and 58% boys). A purposive sampling method was used to have a homogeneous low-SES sample. During the sampling procedure, 2% of the participants ($n=39$), whose family monthly income was reported to be higher than the hunger limit of a four people family in Turkey, were excluded from the analyses. On the other hand, since a vast majority of the participants (94%) lived with their both parents, the rest of the ($n=92$) participants were excluded from the analyses to be able to control the impact of the segregated families. The remaining sample consisted of 1480 students (43% girls and 57% boys), all of whom had lower family monthly incomes than the hunger limit of a four people family in Turkey. The parental educational levels of participants were mostly at elementary school level or lower (94% for mothers and 70% for fathers) and only 17% of the participants ($n=224$) received preschool education. Due to lack of data on the course scores of 168 transferring students, the analyses on average course scores were conducted with the remaining 1312 students. The distributions of participants by grade level for both analyses are summarized in Table 1.

Table 1. *The Distribution of the Participants by Grade Level for Peer Support and Course Scores Analyses*

	Peer Support Analysis		Course Scores Analysis	
	<i>n</i>	%	<i>n</i>	%
Grade 4	216	%15	207	%16
Grade 5	270	%18	251	%19
Grade 6	302	%20	266	%20
Grade 7	320	%22	282	%22
Grade 8	372	%25	306	%23
Total	1480	%100	1312	%100

Materials and Procedure

The academic achievement data were collected through the Turkish Ministry of Education web database upon official permissions, where all participants' course success scores were recorded on a 100-point grading scale. As the indicator of the general academic achievement of students at their grade level, the average scores of students in Mathematics, Science, Social Sciences and Turkish courses were calculated. The names of the students were kept confidential and were used only for matching the data from research instruments, which were administered only to volunteer students. Students were told that they were free to participate in the study; therefore, the whole data of the study – both the research instrument data and academic achievement data– were collected only from the volunteer students.

A demographic survey was designed for gathering personal data about participants, which included questions about students' gender and family SES indicators. The demographic survey is administered along with the Classroom Life Instrument (Johnson et al., 1983), which was used for measuring the participants' perceived peer support scores. The Classroom Life Instrument (CLI) was originally designed as a 59-item survey consisting of 12 factors to assess students' relationships with peers and teachers and their attitudes toward social interdependence. Among the 59 items, four items belonged to the student academic support factor and five items were belonged to the student social support factor (Johnson et al., 1983). Since the purpose of this study was to investigate the peer support levels, only these 9 items related to student support factors were selected from the original CLI. The respondents were asked to rate each item on a 5-point Likert scale of "1: Completely false, 2: False much of the time, 3: Sometimes true and sometimes false, 4: True much of the time, 5: Completely true". The total scores of the nine CLI items were divided by the number of items; therefore the score range for the CLI is 1 to 5, and the higher the score, the higher the perceived peer support. The internal reliability alpha coefficients were reported to be .67 for the student academic support factor and .78 for the student personal support factor (Johnson et al., 1983).

The shortened version of the CLI was translated into Turkish by the author and a Turkish graduate student majoring in elementary science education at an American university. Turkish versions of the surveys were then back-translated into English with the help of another Turkish graduate student majoring in secondary science education at the same American university. Examination of the original versions and the back-translated versions by these experts indicated that the Turkish translations of the surveys were parallel to the original surveys. The Turkish version of the CLI was administered to 280 sixth through eighth grade Turkish middle school students as a pilot study. The participants of the pilot study had similar demographic characteristics to the main study group; however the pilot study participants were not allowed to participate in the main study again. Based on the exploratory factor analysis on the pilot group, the nine items selected from the CLI were found not to contribute to two separate factors of student academic and personal support, but to a single factor with a minimum factor loading of .49. The total explained variance was found 39% for the single factor solution. The Cronbach alpha reliability coefficient was found .80 for this single factor consisting of nine items. Based on these analyses, this single factor in the Turkish version of the CLI is named as perceived peer support, which comprises both the academic and social support provided from the peers.

The structural validity of the Turkish version of the CLI was checked for the main study with the same procedure as well. The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy value of .90, along with the significant result of the Bartlett's Test of Sphericity

($p < .001$), indicated that the data from the sample of this study can be concluded to be appropriate for conducting factor analyses (Pallant, 2007). The exploratory factor analysis for the main study group yielded a single factor solution as well, where all items significantly contributed to the same factor with a minimum factor loading of .51. The Cronbach alfa reliability coefficient was found .83 in the main study and thus it is concluded that the data from the Turkish version of the CLI in this study are both valid and reliable. The findings from the factor analysis of pilot study and the main study are summarized in Table 2.

Table 2. *The factor loadings and factor structure of the Turkish version of the CLI.*

Original Factor Name	Item (Other students in this class,...)	Pilot Study	Main Study	New Factor Name
Student Personal Support	think it is important to be my friend.	.70	.61	Perceived Peer Support
	really care about me.	.68	.73	
	like me as much as they like others	.68	.73	
	like me the way I am.	.59	.66	
	care about my feelings	.49	.51	
Student Academic Support	want me to come to class every day.	.67	.65	
	want me to do my best schoolwork	.66	.66	
	like to help me learn.	.61	.68	
	care about how much I learn.	.51	.59	
Explained Variance Percentage		39%	42%	

Data Analysis

Factorial analysis of variance (ANOVA) models, consisting of the main effects and the interaction effect of the independent variables (gender and preschool education), were used for investigating the first and second research problems. The assumption of the homogeneity of variances was controlled for all ANOVA models with the Levene’s test and it is confirmed that none of the models violated this assumption. Partial eta-squared effect sizes were also calculated to assess the practical significance of the comparisons. As for research problem three, the significance of the relationship between the dependent variables (perceived peer support scores and average course scores) was explored by calculating the Pearson-correlation coefficient. The significance level was used .05 for all statistical analyses.

Findings

The descriptive statistics of all sub-groups compared in the first research problem are summarized in Table 3a and the results from the factorial ANOVA model for the main effects and the interaction effect of the gender and preschool education variables on participants’ average course scores are reported in Table 3b.

Table 3a. *The average course scores descriptive statistics of subgroups*

Gender	Mean	sd	n	Preschool	Mean	sd	n
Girl	62.89	13.77	601	No	59.15	14.81	1104
				Yes	59.17	15.25	208

Table 3b. Factorial ANOVA results for the effects of independent variables on participants' average course scores

Effect Label	Factorial ANOVA Statistics			
	df	F	p	η^2
Gender	1	33.37	<.01	.02
Preschool	1	0.01	.92	.00
Gender* Preschool	1	0.54	.46	.00

Based on the descriptive statistics in Table 3a, the average course scores of girls are about 7 point higher than the average scores of males in a 100-point scale, whereas there seems no major difference between the preschool education variable categories. The factorial ANOVA results from Table 3b, indicate that while the interaction effect (gender*preschool) and the main effect of preschool education variable had no significant effect on students' average scores, gender variable has a significant main effect ($F_{(1,1308)}=33.37$; $p<.01$; $\eta^2=.02$) on students' average course scores. Therefore, it can be concluded that the average course scores of girls are significantly higher than the boys in this low-SES sample. The partial eta-squared effect size shows that the gender variable has a small effect size on average course scores.

The descriptive statistics of all sub-groups compared in the second research problem are summarized in Table 4a and the results from the factorial ANOVA model for the main effects and the interaction effect of the gender and preschool education variables on participants' perceived peer support scores are reported in Table 4b.

Table 4a. The perceived peer support descriptive statistics of subgroups

Gender	Mean	sd	n	Preschool	Mean	sd	n
Girl	3.13	0.91	640	No	3.14	0.89	1256
Boy	3.20	0.87	840	Yes	3.34	0.86	224

Table 4b. Factorial ANOVA results for the effects of independent variables on participants' perceived peer support

	df	F	p	η^2
Gender	1	1.09	.30	.00
Preschool	1	9.13	<.01	.01
Gender* Preschool	1	0.02	.89	.00

As seen in Table 4a, while the mean perceived peer support scores of girls and boys seem to be very close, a clear difference in peer support scores appears between the groups formed by the preschool education variable. The factorial ANOVA results from Table 4b, indicate that while the interaction effect (gender*preschool) and the main effect of gender variable had no significant effect on the perceived peer support levels, preschool education variable has a significant main effect ($F_{(1,1476)}=9.13$; $p<.01$; $\eta^2=.01$) on students' perceived peer support scores. Based on these findings, it can be concluded that the perceived peer support scores of students, who had previous preschool education, are significantly higher than those, who had not preschool education, in this low-SES sample. The partial eta-squared effect size shows that the preschool education variable has a small effect size on perceived peer support scores.

The Pearson-correlation coefficient ($r=.03$; $p=.27$), calculated for answering the third research problem, shows that the correlation between the participants' average course scores and perceived peer support levels is almost zero and therefore no statistically significant relationship exists between these variables.

Discussion and Conclusions

The findings of this study indicate that Turkish students' gender and completion of preschool education variables have different impact patterns on their future academic and social skills. The findings from the factorial variance analyses show that although both genders have similar perceived peer support levels, girls are found to have significantly higher average course scores than boys. These findings are consistent with the comparisons of girls and boys in various recent studies in Turkey (Bursal, 2013; Yıldırım, Yıldırım, Yetişir, & Ceylan, 2013), as well as with international studies across the globe (Martin, Mullis, Foy, & Stanco, 2012; Mullis, Martin, Foy, & Arora, 2012). The similar levels of the perceived peer support for both girls and boys agree with the findings of Lanier (2007) and Wentzel and Caldwell (1997), which indicate that the perceived peer support levels do not change significantly across gender groups at middle school level.

On the other hand, there is a much larger consensus on the interaction of gender and academic achievement variables. There have been an increasing number of studies in recent years that report differences in the academic success levels in favouring of girls (Bursal, 2013; Martin et al., 2012; Mullis et al., 2012; Yıldırım et al., 2013). The reports of the most comprehensive academic achievement studies around the world, such as Trends in International Mathematics and Science Study (TIMSS) and Programme for International Student Assessment (PISA), also repeatedly cite girls as having higher academic achievement than boys in their latest reports (Martin et al., 2012; Mullis et al., 2012; OECD, 2010; 2013). The case is similar for Turkish students, since Turkish girls were found have higher science and reading achievement than boys at the 8th grade level in several TIMSS and PISA studies (Educational Research and Development Agency [ERDA], 2007; 2010). For example, according to the national PISA 2006 report for Turkey, "In general of Turkey, when students' mean science performance scores were considered, female students are more successful than male students." (ERDA, 2007, p. 31-32). Similarly, it is stated in the national PISA 2010 report for Turkey that "Girls outperform boys in reading in all participant countries... The difference between Turkish students' reading scores is 43 in favour of girls." (ERDA, 2010, p. 42).

The findings for the impact of preschool education yielded different patterns on the dependent variables as well. Although many Turkish (Aslanargun & Tapan, 2011; Elibol-Gültekin, 2008; Erbay, 2008; Işıkoğlu-Erdoğan & Şimşek, 2014; Taner & Başal, 2005; Yoleri & Tanış, 2014) and other researchers (Anders et al., 2013; Barnett, 1995; Johnson, 1996; Ladd et al., 1996; Melhuish et al., 2013; Prince et al., 2001; Sammons et al., 2004; 2005; Schweinhart et al., 2005; Temple & Reynolds, 2007; Wentzel & Caldwell, 1997; Yoshikawa, 1995) argued that completing preschool education would increase both the future academic achievement and social skills of students, the findings of this study supported only the long-term impact of preschool education on the social skills of students.

The insignificant difference in the average course scores of students who had and had not completed preschool education would be explained by the differences in the contextual factors and by the long time-gap between the preschool education period and the middle school years. This finding is consistent with Gorey's (2001) conclusion after a meta-analysis study of 35 educational experiments that the achievement difference between the students with preschool education and without preschool education diminish over time. Also, another factor, which has not been investigated in this study, would be the quality of the preschool education that the participants completed. Many previous researchers (Anders et al., 2013; Melhuish et al., 2013; Sammons et al., 2004; 2005; Sylva, 2014) point out that only high quality preschool education provides enduring impact on students' future academic development. Therefore, one possible reason for the insignificant impact

of preschool education on the future academic scores of participants would be the quality of the preschool education programs they had completed. Since exploring the quality of the preschool programs was out of the scope and possibilities of this study, it can be regarded as a limitation of the study. Following the findings of this study, future studies focusing on the quality of Turkish preschool education programs are needed to explain the interplay between the quality and long-term impact of the preschool education.

On the other hand, the significant difference in favour of the perceived peer support levels of students who had completed preschool education, show that the social impact of the preschool education is more likely to continue until the middle school years. Although no long-term academic impact of preschool education was detected in this study, the participants with previous preschool education experience were found to have significantly higher perceived peer support than their peers. As was discussed above, the quality of the preschool education question may appear here; however; it can be concluded from the findings that completing the preschool allows enhancing the future interactions of students with their peers in a positive direction, regardless of the quality of the preschool education program. The early social interactions of children during the preschool years may help them gain more social skills than their peers, even in the standard preschool education programs. These findings are supported by the previous research (Barnett, 1995; Gorey, 2001; Sammons et al., 2005; Schweinhart et al., 2005; Temple & Reynolds, 2007; Yoshikawa, 1995), which had reported that preschool education might have a long-term impact of enhancing students' social skills. Therefore, it can be concluded that the preschool education may have provided a positive effect on the peer relations of the sample of this study. As was recommended above, further studies are needed to explore the relationship of the quality of preschool education programs and their long-term impact on students' social skills development.

The weak correlation between the average course scores and the perceived peer support scores of students indicate that Turkish students' peer support levels are independent of their academic achievement levels. While this finding contradicts to the findings of studies in developed Western countries (Ryan & Patrick, 2001; Wentzel & Caldwell, 1997; Wentzel & McNamara, 1999; Zitzmann, 2005), it is well consistent with the studies conducted in non-Western countries (Chen, 2008; Gherasim et al., 2013) which had concluded that the school achievement is independent of the perceived peer support levels.

Based on the findings of this study, it can be argued that preschool education have a positive impact on students' future peer relations. Students who attend preschool education programs are likely to perceive a higher peer support, which is probably the outcome of gaining social skills at early ages. However, there is much more to say about the long-term impact of the preschool education. These issues are especially important for Turkey because although Turkish authorities are trying to widespread the preschool education, there has been very little effort on exploring the long-term impact of Turkish preschool education programs. This study may serve as a stepping-stone; however, longitudinal studies from kindergarten to college years, should be conducted to gather more persuasive data about the academic and social impact of the preschool education.

This study was limited to participants from a low-SES sample, therefore new studies are needed to explore the impact of preschool education on the students from middle and higher SES levels. Also, instead of merely using a survey instrument, additional qualitative data sources, such as observations, blogs and interviews, can be used for investigating the perceived peer support among students. Another limitation of the study is the time-gap between the preschool years and the grade levels (4th through 8th) that were included in the study. Longitudinal panel design studies, where annual data from same students are collected beginning from the preschool education through the elementary and middle

school years would provide more detailed information about the academic and social impact of the preschool education in the following years.



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